(No Model.)

# J. NADAL.

## STUD, SOLITAIRE, &c.

No. 341,268. Patented May 4, 1886.

Fig. 1

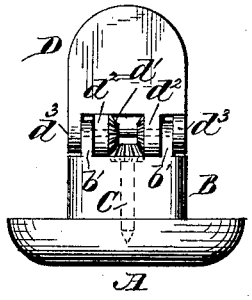



Fig. 2

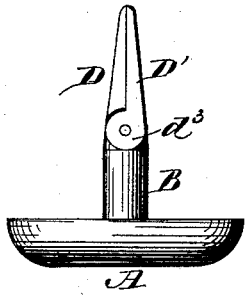



Fig. 3

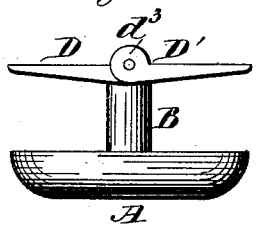



Fig. 7

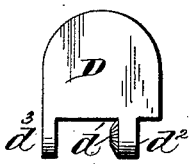



Fig. 7a

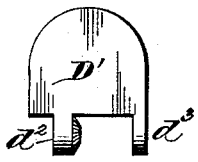



Fig. 8

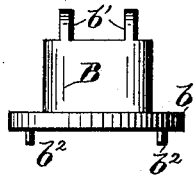



Fig. 9

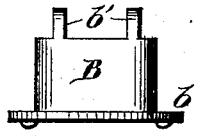



Fig. 4

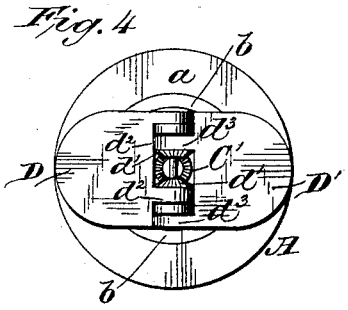



Fig. 5

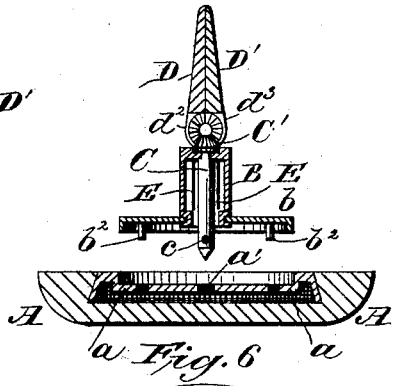



Fig. 10

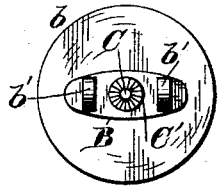



Fig. 11

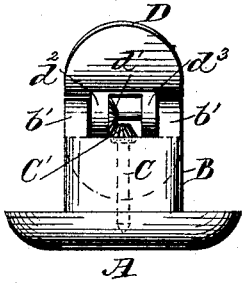



Fig. 6

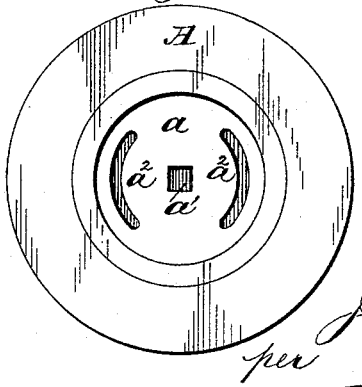
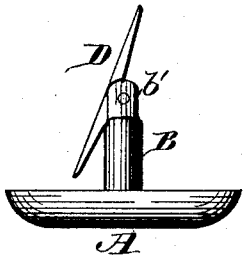



Fig. 12




Witnesses:-

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W. E. Boulter.

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per Henry Orth

his atty.

# UNITED STATES PATENT OFFICE.

JEAN NADAL, OF PARIS, FRANCE.

## STUD, SOLITAIRE, &c.

SPECIFICATION forming part of Letters Patent No. 341,268, dated May 4, 1886.

Application filed January 5, 1886. Serial No. 187,654. (No model.) Patented in England April 29, 1884, No. 6,969; in France October 5, 1884, No. 164,803, and in Germany April 28, 1885, No. 33,919.

*To all whom it may concern:*

Be it known that I, JEAN NADAL, a citizen of France, residing at Paris, in the Department of the Seine and Republic of France, have invented certain new and useful Improvements in Studs, Solitaires, and similar Articles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figurs of reference marked thereon, which form a part of this specification.

This invention relates to that class of buttons known as "detachable" buttons—that is, such buttons as are not directly connected with the fabric, but may be detached therefrom and generally used as sleeve, cuff, and shirt-front buttons, and are composed of a head or the button proper, and a shank composed of a stem, and a latch or wing pivoted thereto and adapted to be tilted at right angles to said stem, to form a retaining device on the inside of the fabric or article, the head forming the corresponding retaining device on the outside of such fabric or article. In buttons of this class the retaining device pivoted to the shank has usually been provided with a spring that exerts its power either on the pivot or on the retaining device itself, or on both, to hold said retaining device either on a line with the shank of the button, to adapt it to be inserted in and withdrawn from the button-hole, or at right angles to said shank to keep the button from falling or moving out of the button-hole. In this construction, when it is desired to withdraw the button from the button-hole it is necessary to straighten the pivoted latch or wing by proper manipulation with the fingers, and as the shanks of such buttons are usually very short it is not only difficult to straighten the latch or wing, but there is such a strain on the pivot of the latter as to render them unserviceable in a comparatively short time, and often the pivotal connections break in the effort to straighten the pivoted latch or wing.

The object of this invention is to overcome these disadvantages and difficulties and provide means whereby the latch or latches or wings may be straightened by simply rotating the head of the button in one direction, and by rotating said head in a reverse direction said latch or latches or wings are again moved into a position at right angles to the shank.

To this end the invention consists, essentially, in the combination, with the head of the button, of means for operating the pivoted latches on the shank thereof, substantially as hereinafter fully described.

The invention further consists in the details of construction and the combination of parts that constitute my improved button, substantially as hereinafter fully described.

In the accompanying drawings, forming a part of this specification, in which like letters of reference indicate like parts, I have shown in Figure 1 a side elevation, and in Fig. 2 an end elevation, of my improved button, with the latches or wings on a line with the shank of the button. Fig. 3 is a side elevation, and Fig. 4 a plan view, of the button, showing the latches or wings tilted at right angles to the shank of the button. Fig. 5 is a vertical transverse section of the button. Fig. 6 is an inner plan view of the head thereof. Figs. 7 and 7ª are elevations of the two wings or latches. Fig. 8 is a side elevation of the shank proper. Fig. 9 is a like view of a modified form thereof. Fig. 10 is a plan view of the shank shown in Figs. 8 and 9. Fig. 11 is a side elevation, and Fig. 12 is an end elevation, of a button constructed according to my invention, and having but one latch or wing.

A indicates the head of the button, which may be of any desired shape and material, in which is secured a bearing-plate, *a*, that has a central square opening, *a'*, and segmental slots or grooves $a^2$ on opposite sides of the axial opening, and drawn from the center of said opening. The shank of the button is composed of a sleeve, B, preferably oblong in form, and having at one end a disk, *b*, which on its under side is provided with studs or projections $b^2$, that project into the slots or grooves $a^2$, formed in the bearing-plate *a*, to guide the head A of the button properly when rotated to set the wings or latches of the button-shank. At its upper end the sleeve B has

two bearings, $b'$, for the pivot-pin of the wings or latches. In said upper end of the shank B of the button is also formed a bearing for the operating-spindle C, that is square in cross-section except where it rotates in said bearing, which spindle carries at its upper end a cone-pinion, C', and its lower end has a perforation, $c$, for the reception of a locking-pin that locks the spindle to the bearing-plate $a$ of the button A. The latches or wings D and D' are each provided with two perforated lugs or ears, $d^2$ and $d^3$, respectively. The lugs $d^2$ have a cone-pinion, $d'$, secured to their inner faces that mesh with the pinion C' on the end of the spindle C.

It is obvious that when the head or button proper, A, is rotated in one direction it will rotate the two latches or wings in opposite directions either to throw them open or close them together, as shown. Thus when the button is applied to a cuff, for instance, with the latches or wings D and D' folded together, as in Figs. 1, 2, and 5, it will simply be necessary to rotate the button A toward the right, when both the latches D and D' will be thrown outward at right angles to the shank or sleeve B and spindle C, as shown in Figs. 3 and 4. When, on the contrary, it is desired to withdraw the button it will simply be necessary to rotate the button-head A toward the left, when the wings or latches D and D' will be thrown up and folded together again.

The latches or wings D D' as described form practically a cross-bar or cross-head that folds or unfolds on the shank, and in either of these positions they constitute a rigid cross-head to all intents and purposes, which, when unfolded, serves to lock the button in the button-hole.

It is evident that instead of loosely mounting the latches or wings on their pivot, and rigidly connecting the operating-pinions thereto, said pivot may be loosely mounted in the shank-bearings, and the latches rigidly secured to the pivot, in which case the operating pinions may be secured to the pivot instead of securing them to the latches.

To prevent the button A from being rotated otherwise than by power applied thereto I employ two plate or other springs, E, secured within the sleeve B, that bear upon opposite faces of the spindle C, and hold the same against accidental rotation.

As the shank of the button is of oblong or elliptical shape—that is to say, of the form of the button-hole—it will not so readily deform the same, and the edges of said button-hole will exert sufficient resistance to prevent the shank from turning in the button-hole when the button A is rotated with sufficient force to overcome the stress of the springs E.

The slots or grooves $a^2$, in the bearing-plate $a$ of the button A, limit the amplitude of rotation of the button, their ends forming stops for the lugs or buttons $b^2$ on the base-plate or disk of the said shank B, so that the button cannot be rotated further than is necessary to properly operate the pivoted latches or wings D D', and thereby prevent injury to the gearing thereof with the spindle.

Other means than those described to limit the rotation of the spindle may be employed. For instance, the pin may be passed through it at any convenient point, the opposite ends of which may be made to project into slots formed in the shank B or in the springs E thereof, or that engage fixed stops arranged within the said shank or even the inner sides thereof. It is also obvious that but one latch may be employed, pivoted at or near its longitudinal center to the shank, as shown in Figs. 11 and 12, the said latch constituting a rigid cross-bar to lock the button in the button-hole; that by the connections described the said cross-bar or cross-head will perform the same function as the two latches hereinbefore referred to, which also practically constitute a cross-bar or cross-head, but made of two sections, which, when either is deployed or folded, becomes a rigid bar for all intents and purposes.

In the construction shown in Figs. 11 and 12, but one cone-pinion, $d'$, on the cross-bar can be employed, as will be readily understood, said pinion $d'$ meshing with the pinion C' on the shaft or arbor C, said devices operating substantially as the corresponding devices that control the movements of the two sections of the cross-bar or cross-head—*i. e.*, the wings or latches D and D'—described in reference to Figs. 1 to 10, inclusive. It is obvious, however, that when a rigid cross-bar is employed, as last herein described, it cannot be positioned by the operating devices so as to be strictly on a line with the shank, as is the case with the sectional cross-bar or wings D D', which, when in the position shown in Figs. 1 and 2, form practically an extension or continuation of the shank, and for this reason the latter construction will be found more convenient.

In the drawings I have shown a cuff-button embodying my invention that has a head connected with the bearing-plate $a$. It is obvious, however, that the said bearing-plate may be constructed to form a setting for a stone or brilliant, or a series of the latter, or a pearl or pearls, and that it may be constructed of suitable dimensions for use as a shirt-front button, or for any other purpose for which this class of buttons is usually employed.

Other means than those shown for operating the wings or latches by rotating the button in its shank may also be employed. For instance, the gearing C' $d'$ may be dispensed with and a cross-bar applied and operated by a coiled spring arranged in the shank B. This cross-bar, when the wings or latches are folded together and on a line with the shank, will lay between them, but when on the rotation of the button the said latches are unfolded or thrown down, the cross-bar will lie in a cavity where it will be held by a coiled spring, the folding of the latches being here effected by the forcible withdrawal of the button from the

button-hole, and other arrangements may be made to effect the end in view—namely, to fold and unfold the latches by means other than by directly manipulating them with the fingers.

What I claim is—

1. In a button of the class described, the combination, with the shank and a cross-head or cross-bar pivoted thereto, of the button-head rotatably connected with the shank, and a connection between the button-head and cross-head consisting of a bevel-gear controlled from the button-head to rotate the cross-bar on its pivot, substantially as described.

2. In a button of the class described, the combination, with the shank and a cross-head or cross-bar pivoted thereto, of the button-head rotatably connected with the shank, a connection between the button-head and cross-bar consisting of a bevel-gear controlled from the button-head to rotate the cross-bar on its pivot, and a stop to limit the amplitude of the rotation of said button-head, substantially as described.

3. In a button of the class described, the combination, with the shank, and a cross-head or cross-bar pivoted thereto, of the button-head rotatably connected with the shank, a connection between the button-head and cross-bar consisting of a bevel gear controlled from the button-head to rotate the cross-bar on its pivot, and a stop to lock the button-head against accidental rotation, substantially as described.

4. In a button of the class described, the combination, with the shank and a foldable cross-head or cross-bar pivoted thereto, of the button-head rotatably connected with the shank and a connection between the said head and foldable cross-bar, consisting of a bevel-gear controlled from the button to fold and unfold the cross-bar, substantially as described,

5. The combination, with the shank and a foldable cross-head or cross-bar pivoted thereto, of the button-head rotatably connected with the shank, a connection between said button-head and foldable cross-bar, consisting of a bevel-gear controlled from the button-head and a stop to limit the amplitude of the rotation of the button-head when rotated to fold or unfold the cross-bar.

6. The combination, with the shank, and a foldable cross-head or cross-bar pivoted thereto, of the button-head rotatably connected with the shank, a connection between said button-head and foldable cross-bar, consisting of a bevel-gear controlled from the button-head, a stop to limit the amplitude of the rotation of the button when rotated to fold or unfold the cross-bar, and a stop to lock said button-head against accidental rotation, substantially as described.

7. The combination, with the plate *a*, the squared spindle C, carrying pinion C′, of the hollow shank B, the latches or wings D D′, pivoted thereto, and the pinions *d*′, operated from the pinion C′, substantially as and for the purpose described.

8. The combination, with the plate *a*, provided with a square opening, *a*′, and segmental slots or grooves $a^2$, of the squared spindle C, secured to plate *a* and carrying a pinion, C′, of the shank B, having lugs or projections $b^2$ on the under side of its base operating in the segmental slots or grooves of plate *a*, the latches D D′, pivoted to said shank, the pinions *d*′, meshing with pinion C′, and the retaining-springs E, said parts being arranged for co-operation, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

JEAN NADAL.

Witnesses:
ROBT. M. HOOPER,
JOUBERT.