

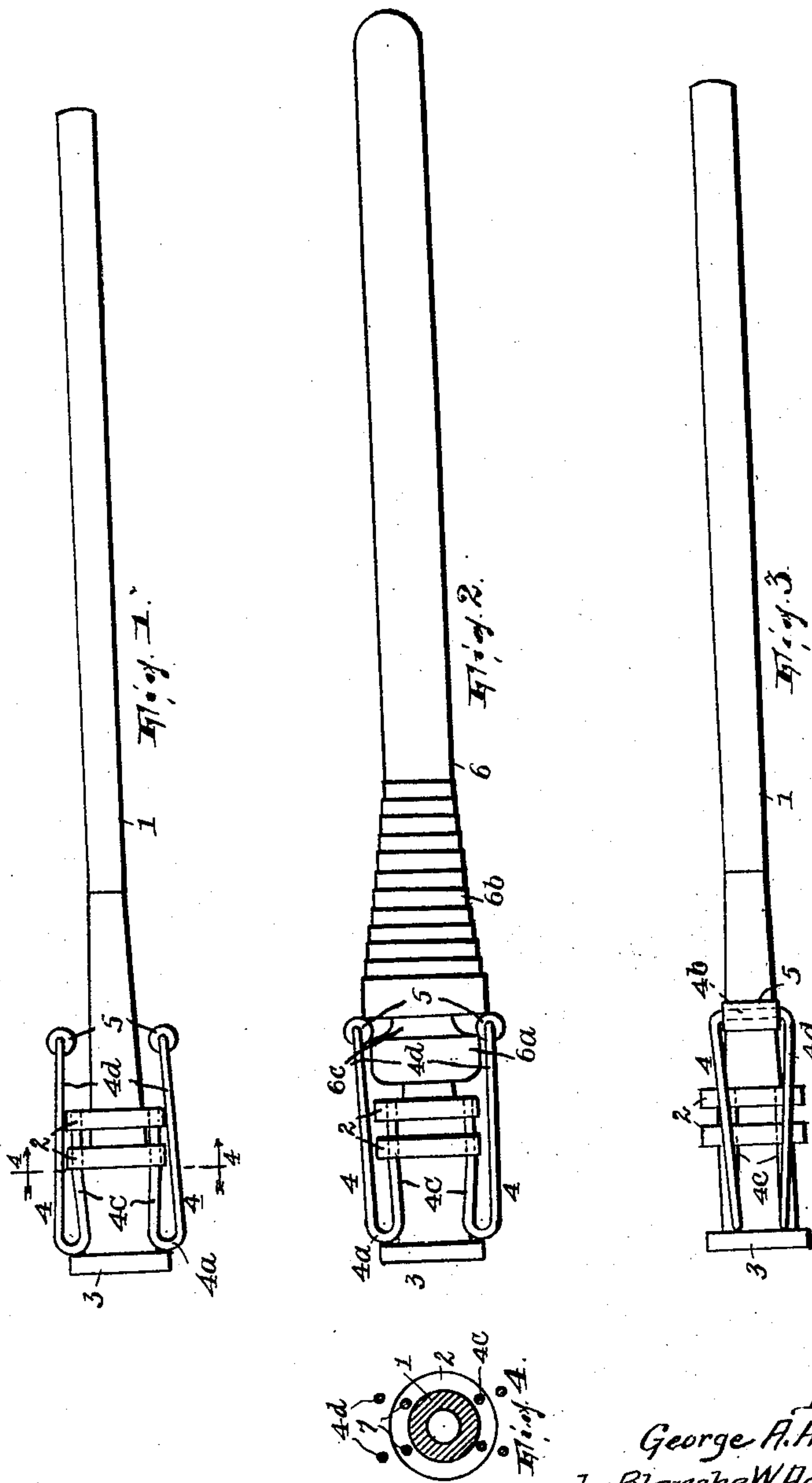
Feb. 14, 1933.

G. A. ADSIT

1,897,716

SPINDLE

Filed Jan. 8, 1932



Inventor
George A. Adsit, Dec'd.
by Blanche W. Adsit, Executrix
BY
J. H. Edwards.
ATTORNEY.

UNITED STATES PATENT OFFICE

GEORGE A. ADSIT, DECEASED, LATE OF EAST PATERSON, NEW JERSEY, BY BLANCHE W. ADSIT, EXECUTRIX, OF EAST PATERSON, NEW JERSEY

SPINDLE

Application filed January 8, 1932. Serial No. 585,432.

This invention relates to spindles and especially spindles used in machines such as quilling or other winding machines. Its object is to improve the device of such a spindle by which the quill or other core for the windings is removably held on the spindle and which as heretofore constructed both failed in use to retain the intended gripping action through bending or distortion and also caused wear or mutilation of the heads of the quills with the consequence in either case that successive quills placed on the spindle did not assume or retain a given position necessary for proper cooperation with the thread-guide of the machine.

Fig. 1 is a side elevation of the spindle;

Fig. 2 is a similar view of the spindle with a quill in place thereon;

Fig. 3 is a side elevation of the spindle turned through 90 degrees from the position of Fig. 1; and

Fig. 4 is a section on line 4—4, Fig. 1.

The spindle proper is designated 1 and near its butt it has a collar 2 here in the form of two spaced flanges; at the butt there may also be a collar 3.

Diametrically opposite each other there are attached to the collar two spring clips 4. Each clip is formed by bending a piece of elastic or spring wire first to U-shaped form and then re-bending the piece so formed around a transverse axis parallel to the plane of the U, these bends 4a being preferably curves and equidistant from the closed end portion or cross-bar 4b of the U and nearer the free ends of the U than its cross-bar. Thus what is termed the (here, binary) shank portion or leg 4c of the device is shorter than what is termed its grip portion or leg 4d. In the specific form shown there is journaled on the cross-bar of the gripping leg of each clip an anti-friction device, as a roller 5.

6 designates the quill, having a head 6a and a conical portion 6b.

The collar 2 has two pairs of holes 7. Into these pairs of holes, respectively, are entered the terminal portions of the legs 4c of the clips (each such terminal portion being here formed by the two tips of the

corresponding leg 4c), so that in the ultimate assembly the legs 4c and 4d of each clip are substantially parallel with the spindle; this is done so that each terminal portion is entered from the butt side of the collar 2, preferably with a driven fit, leaving the rebends 4a projecting toward the butt and the legs 4d projecting toward the free end of the spindle.

The head 6a of the quill of course exceeds in diameter the space between the rounded protuberances which exist at the free ends of the grips at their adjoining sides and here formed by the adjoining portions of the rollers, so that such head cannot pass them without camming them apart.

The stated form of each clip is such that it may have ample resiliency. Heretofore the quill-holding clip, instead of projecting back from the point of securing it to the spindle and then forward, has extended directly forward from such point. Therefore its length from the securing point to its free end was relatively short, which limited its resiliency. Consequently it frequently became bent, or distorted outward from the spindle, so that its holding force on the quill was reduced, in some cases so as to be quite ineffectual to prevent the quill slipping lengthwise out of that definite position for proper cooperation with the thread-guide of the quilling or other winding machine; and if the clip was made strong enough to resist this bending or distorting then it required undue effort to cam the quill-head past its abutment, and the head of the quill became worn thereby so that it became impossible to continue to use the quill with assurance that it would be held against shifting or accurately related to the thread-guide. The clip herein described being characterized by a rearwardly projecting shank portion or leg and by a rebend whereby its remaining or grip portion or leg extends forwardly, ample resiliency is present and possible bending or distorting of the clip is avoided. The present clip is further adapted to accommodate itself to a much wider range of variation in

the sizes and forms of quill heads than the ordinary clip.

Due to the rollers 5 the gripping action may be quite strong and yet the quill heads
5 will not be worn in the shifting thereof past the rollers, which bear thereon with a rolling action, or without slippage.

A further feature of the invention is that the protuberances here formed by the rollers engage in and against both sides of the
10 groove 6c which exists between the head and conical portion of the quill. In the ordinary construction, the head abuts an enlargement such as a collar 2 and the clips
15 are assumed to hold the head thereagainst by pressing against its forward side. If the thickness of the head is greater or less than the space between such enlargement and the gripping points of the clips then
20 the quill will not be held securely. By the present construction the quill becomes accurately gaged in position on the spindle whatever the thickness of its head and it remains permanently so positioned.

25 Having thus fully described the invention what is claimed is:

1. In combination, a spindle for receiving the core of a mass of windings and having a collar at its butt portion and a clip consisting of a piece of stiff elastic material re-
30 bent on itself and positioned with its legs substantially parallel with the spindle and having the terminal portion of one leg projecting toward the free end of the spindle and extending into the collar from the butt-
35 side end thereof and the other leg forming a grip to grip the core.

2. In combination, a spindle for receiving the core of a mass of windings and a clip
40 consisting of a substantially U-shaped stiff elastic wire bent on itself and having its closed end portion projecting from the butt toward the free end of the spindle and forming a grip to grip the core and its remain-
45 ing portion secured as to both extremities thereof to the spindle.

3. In combination, a spindle for receiving the core of a mass of windings and a clip consisting of a substantially U-shaped piece
50 of stiff elastic material bent on itself and having its closed end portion projecting from the butt toward the free end of the spindle and forming a grip to grip the core and its remaining portion secured as to both
55 extremities thereof to the spindle, said grip having a revoluble core-contacting anti-friction device at its closed end.

4. In combination, a spindle for receiving the core of a mass of windings and a
60 clip consisting of a piece of stiff elastic material secured to the spindle and having a portion projecting from the butt toward the free end of the spindle and forming a grip to grip the core and provided with a re-
65 voluble core-contacting anti-friction device.

5. In combination, a spindle, a core for a mass of windings arranged on the spindle and having a circumferential groove at its butt, and a clip consisting of a piece of stiff elastic material secured to the spindle
70 and having a portion projecting from the butt toward the free end of the spindle and forming a grip to grip the core, said portion having a revoluble core-contacting anti-friction device. 75

In testimony whereof I affix my signature.

BLANCHE W. ADSIT,
Executrix of George A. Adsit, Deceased.

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