

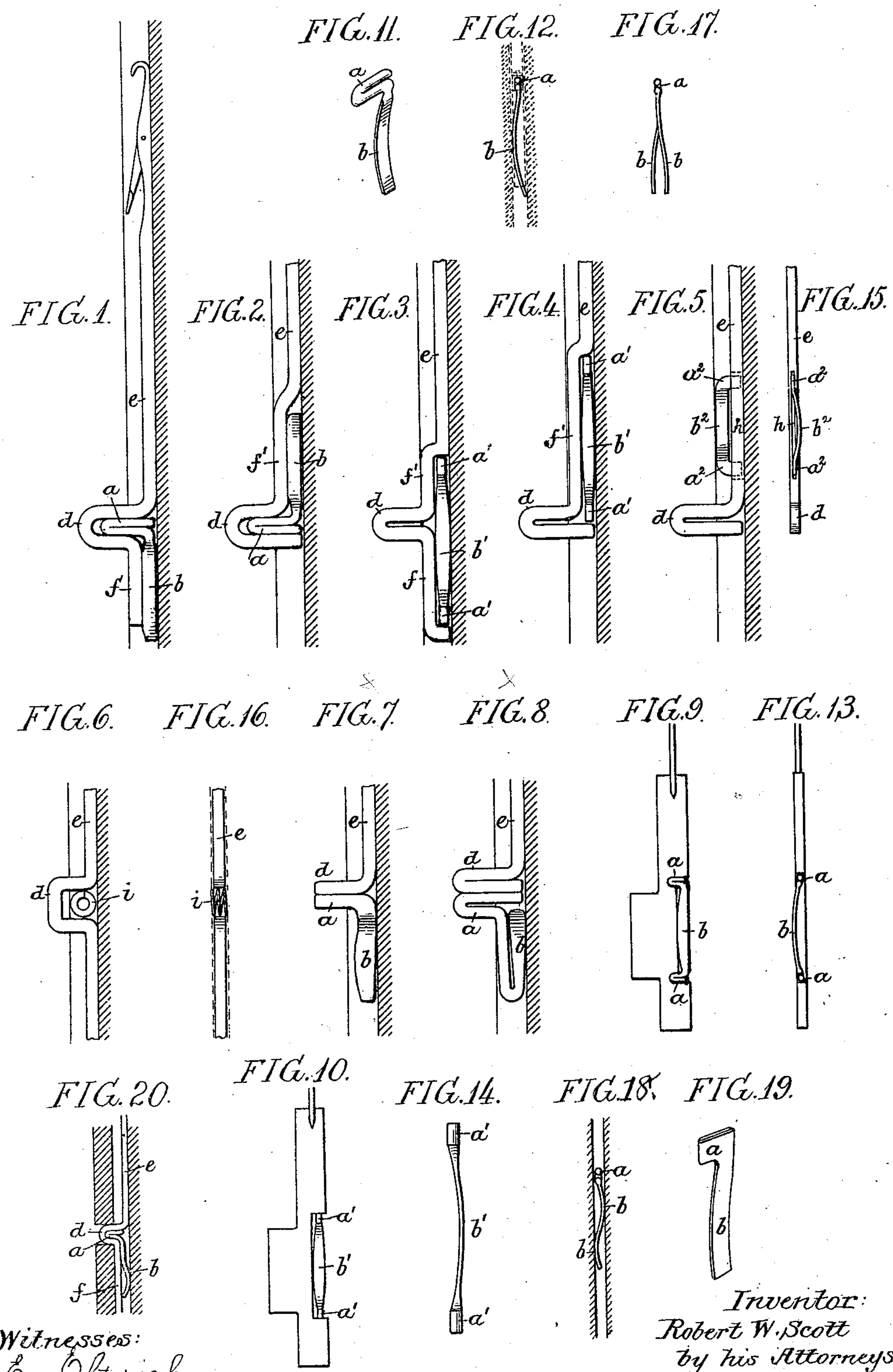
(No Model.)

R. W. SCOTT.

SPRING SUPPORTED NEEDLE FOR KNITTING MACHINES.

No. 433,747.

Patented Aug. 5, 1890.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ROBERT W. SCOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO LOUIS N. D. WILLIAMS, OF SAME PLACE.

## SPRING-SUPPORTED NEEDLE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 433,747, dated August 5, 1890.

Application filed December 9, 1889. Serial No. 333,029. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Spring-Supported Needles for Knitting-Machines, of which the following is a specification.

The object of my invention is to simply and cheaply combine with a knitting-machine needle or its jack a spring for bearing against one of the walls of the needle-groove in the machine and serving by its friction thereupon to support the needle in any vertical position to which it may have been adjusted, or to prevent movement of the needle in either direction due to momentum; and this object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view, on an enlarged scale, of a knitting-machine needle with frictional retaining-spring combined therewith in accordance with my invention. Figs. 2 to 8, inclusive, are views showing other plans of combining a spring with the needle. Figs. 9 and 10 are views showing applications of springs to needle-jacks. Fig. 11 is a perspective view of the spring shown in Fig. 1. Fig. 12 is an edge view of the same with the needle and needle-guides in dotted lines. Fig. 13 is an edge view of the needle-jack and spring shown in Fig. 9. Fig. 14 is an edge view, on an enlarged scale, of the springs shown in Figs. 3, 4, and 10. Figs. 15 and 16 are respectively edge views of the needle shanks and springs, shown, respectively, in Figs. 5 and 6. Figs. 17, 18, and 19 represent different forms of springs, and Fig. 20 shows a modified construction and arrangement of spring.

Knitting-machine needles have been heretofore made with a portion of the stem or shank of the needle or jack thinned and bent so as to form a spring for bearing against one or more of the walls of the needle-groove and holding the needle in position vertically after it has been elevated, or preventing accidental movement; but the formation of such a spring from the needle stem or shank itself very much increases the cost of the needle, and

the same is true of the formation of a spring-finger directly upon the jack, as the finger must be bent and ground down by hand so as to thin it, and in the case of the jack expensive metal must be used for the jack itself if the spring-finger is to be formed therefrom, while in either case the breaking of the spring necessitates the discarding of the entire needle or needle and jack, or the breaking of the needle renders the spring of no avail.

I find that by making the spring separate from the needle it can be made at such small expense as not to add materially to the cost of the needle, especially as it can be held in place on the needle without any other fastening than the mere fitting of the parts together, and when the spring is thus made separately injury to the spring does not render the needle worthless, nor does injury to the needle necessitate the discarding of the spring.

The spring shown in Figs. 1, 11, and 12 consists of a butt or nib *a* of bent wire having an elastic finger *b*, formed by flattening the wire, this finger projecting downward and laterally, so that it will bear against one or both of the side walls of the needle-groove when the spring has been combined with the needle, as shown in Fig. 12, for instance, the butt or nib *a* being inserted into the open butt *d*, formed upon the stem *e* of the needle for the action of the knitting-cam, and the spring being thus retained vertically in position by the said butt *d*, while it is prevented from being displaced radially by the base of the needle-groove, that portion *f* of the stem or shank of the needle below the butt *d* being in a vertical plane in advance of or farther from the base of the needle-groove than the portion above the butt, so that sufficient space is afforded between said lower portions *f* of the stem and the base of the needle-groove for the reception of the spring-finger *b*.

The thickness of the wire forming the nib *a* of the spring need only be such that it cannot by any possibility slip between the needle and either side wall of the needle-groove, and the formation of the spring-finger can be ef-



fectured by simply flattening by compression the wire of which this spring is composed; hence the springs can be manufactured very cheaply, whereas the formation of a spring by compressing the comparatively heavy shank or stem of the needle is not permissible, because of the undue width which is imparted to the flattened portion of the shank when the latter is flattened by compression, while, owing to the fact that there would be the same bulk of metal in the flattened portion as in the shank, the elasticity of said flattened portion would be but little, if any, greater than if it had not been flattened.

It will be evident that various means of constructing the independent spring and combining it with the needle may be adopted without departing from my invention, and a number of such ways are illustrated in the drawings—for instance, in Fig. 2 a spring similar to that shown in Fig. 1 is illustrated, but in a reversed position, the spring-finger being above the butt of the needle and being contained in a recess by an offset portion  $f'$  of the needle-stem.

In Figs. 3 and 4 a spring is shown having opposite thick heads  $a'$  and intermediate thinned and bent spring portion  $b'$ , as shown in Fig. 14, this spring being contained within a recess in the needle stem or shank, while in Figs. 5 and 15 is shown a spring which is of uniform thickness throughout, the opposite ends  $a^2$  of the spring being bent at right angles to the intermediate or laterally-bent spring portion  $b^2$  and adapted to a slot  $h$  in the stem of the needle, or the butt or other recessed portion of the needle may contain simply a short section of coiled spring  $i$ , as shown, for instance, in Figs. 6 and 16, so long as the spring has sufficient frictional bearing upon the side walls of the needle-groove to constitute it an effective means of supporting the needle when the latter is elevated, or preventing movement of the needle in either direction due to momentum. It is not necessary for the purpose of supporting the needle when elevated that the spring should be contained within a recess of the needle-stem, as the spring may be located beneath the butt of the needle, so as to be acted upon by the lifting-cam of the machine, and so as to carry the needle with it as it rises, instances of this construction being shown in Figs. 7 and 8.

In Figs. 9 and 13 I have shown one method of combining the spring with a needle-jack, the latter being recessed for the reception of the spring-finger  $b$  and of nibs  $a$  at the opposite ends of the same, while in Fig. 10 I have shown a needle-jack recessed for the reception of a spring of the same character as that illustrated in Figs. 3, 4, and 14. In some cases it may be advisable to split the spring-finger and to bend the two parts of the same in opposite directions, so that they will bear against the opposite walls of the needle-groove, as shown in Fig. 17, for instance, or, on the other hand, the single spring-finger

may be reversely bent or curved, as shown in Fig. 18, so as to bear first upon one wall of the needle-groove and then upon the opposite wall of the same.

Instead of thinning a wire to make the spring-finger, a piece of flat wire may be doubled or bent at one end, so as to thicken it sufficiently to constitute it an effective support for the needle, an instance of such construction being shown in Fig. 19; and in some cases the spring-finger may, as in Fig. 20, bear upon the base or rear wall of the needle-groove, instead of upon either or both of the side walls of the same.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of a knitting-machine needle with a spring separate therefrom and serving as a support for the needle, said spring having a portion for bearing against one of the walls of the needle-guiding groove and said bearing portion being elastic, substantially as specified.

2. The combination of a knitting-machine needle having a recess therein with a supporting-spring separate from the needle and having a portion engaging with said recess, substantially as specified.

3. The combination of a knitting-machine needle with a spring separate from the needle and having a portion for bearing upon the needle and a thinned and bent portion for bearing against one of the walls of the needle-groove, substantially as specified.

4. The combination of the needle-stem having a projecting butt for the action of a cam and adjacent to said butt, a portion in advance of the main stem, with a supporting-spring separate from the needle and contained within the recess formed by the offset portion of the stem, substantially as specified.

5. The combination of the stem of a needle having an open butt and an offset portion of the stem adjacent thereto with a supporting-spring separate from the needle and having a nib contained within the open butt and a projecting spring-finger contained in the recess formed by the offset portion of the needle-stem, substantially as specified.

6. A knitting-machine needle having a portion of its stem in a plane in advance of the main stem and parallel therewith, forming an open recess in the needle, in combination with a supporting-spring independent of the needle and contained within the said recess, substantially as specified.

7. The within-described supporting-spring for a knitting-machine needle, the same having a portion for engaging with the needle and a bent portion for bearing against a wall of the needle-groove, substantially as specified.

8. The within-described supporting-spring for a knitting-machine needle, the same having a portion for engaging with the needle and a thinned and bent finger for bearing



upon a wall of the needle-groove, substantially as specified.

9. The within-described supporting-spring for a knitting-machine, the same consisting  
5 of a projecting nib and a thinned and bent spring-finger for bearing against a wall of the needle-groove, substantially as specified.

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

ROBERT W. SCOTT.

Witnesses:

R. SCHLEICHER,

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