

No. 677,806.

Patented July 2, 1901.

R. W. SCOTT.  
KNITTING MACHINE NEEDLE.

(Application filed Dec. 3, 1900.)

(No Model.)

Fig. 1

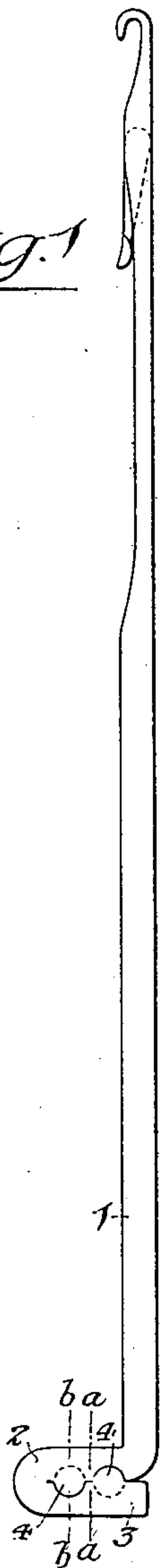


Fig. 4.

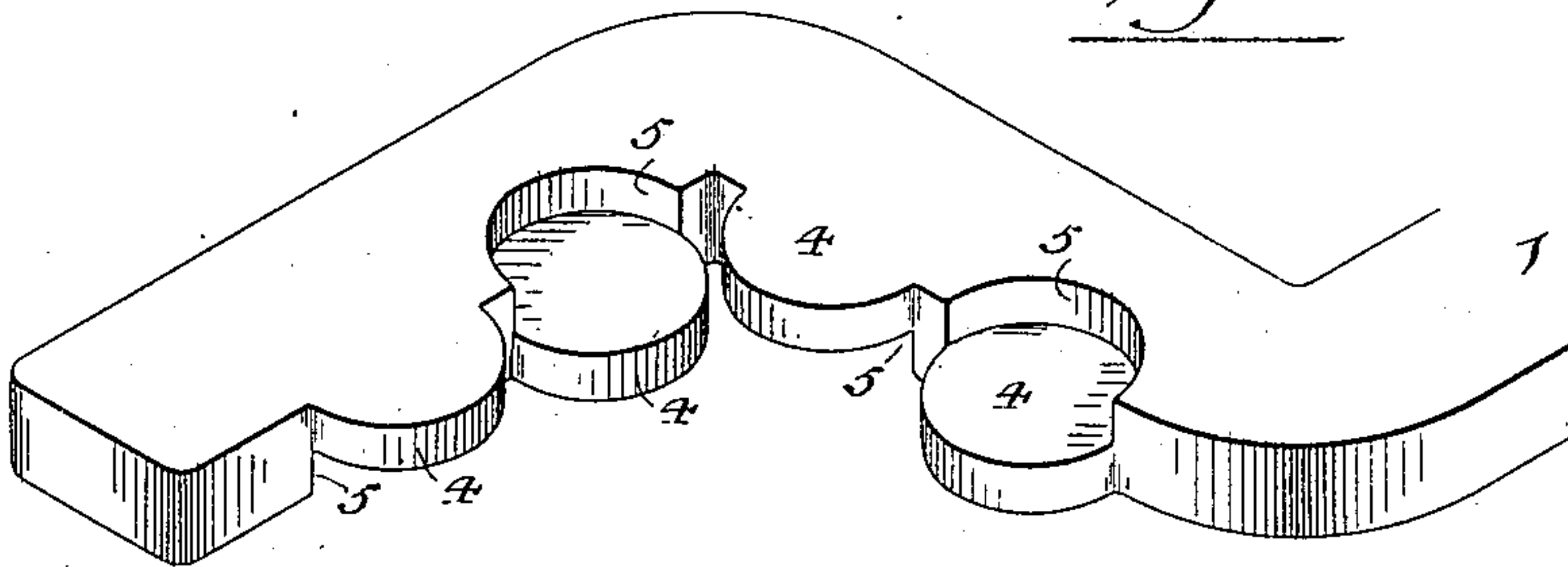


Fig. 2.

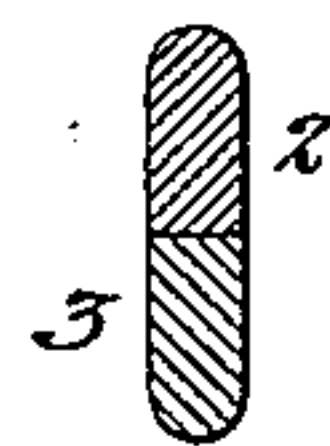


Fig. 3.

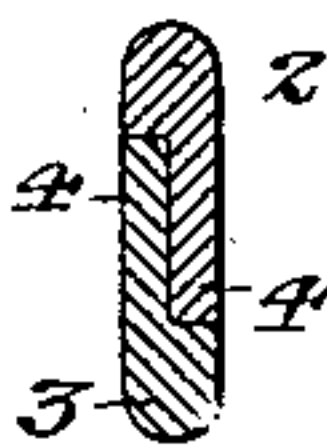


Fig. 5.

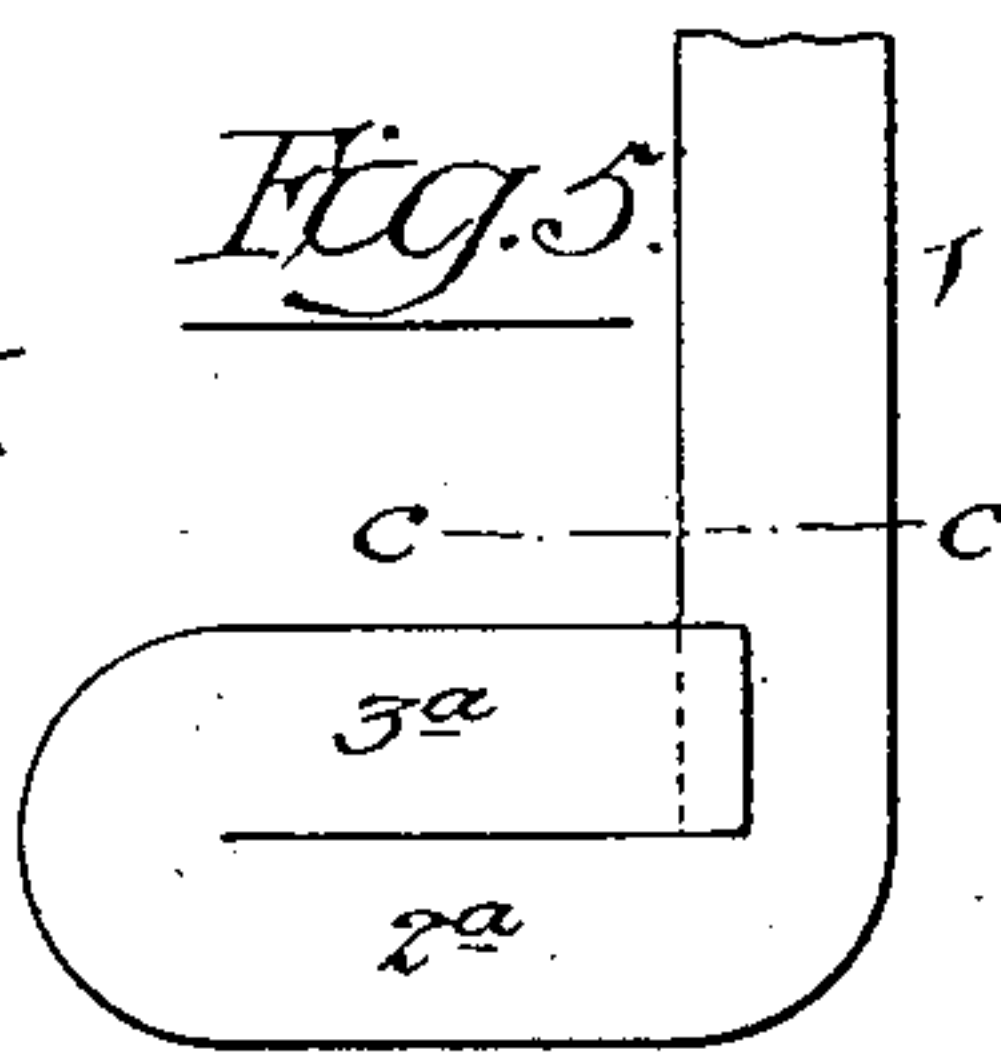


Fig. 6.

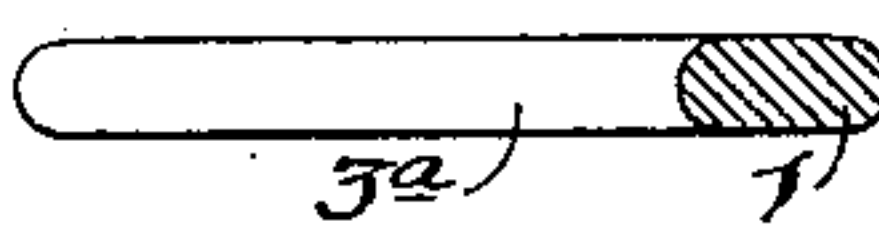


Fig. 15.

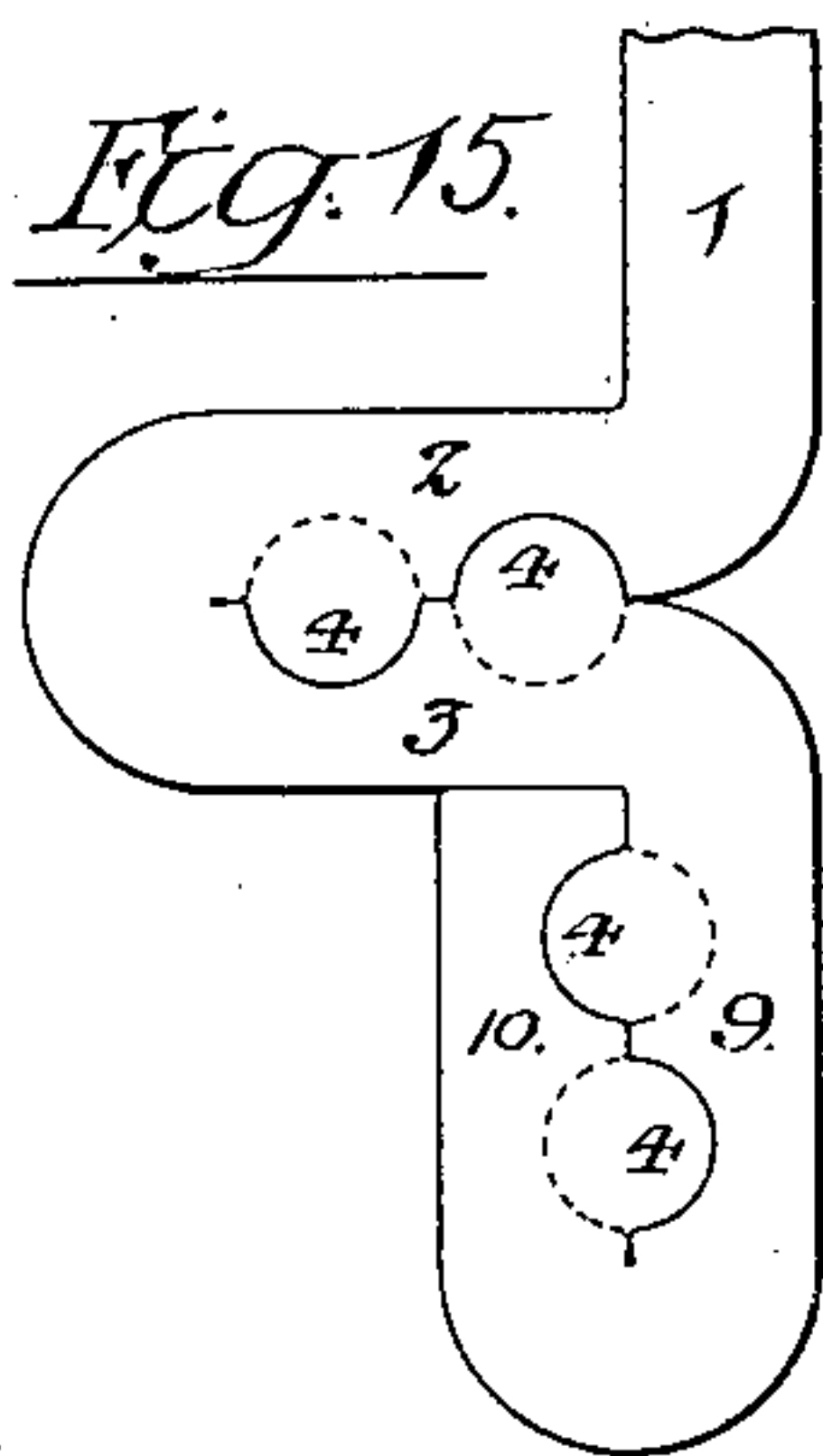


Fig. 16.

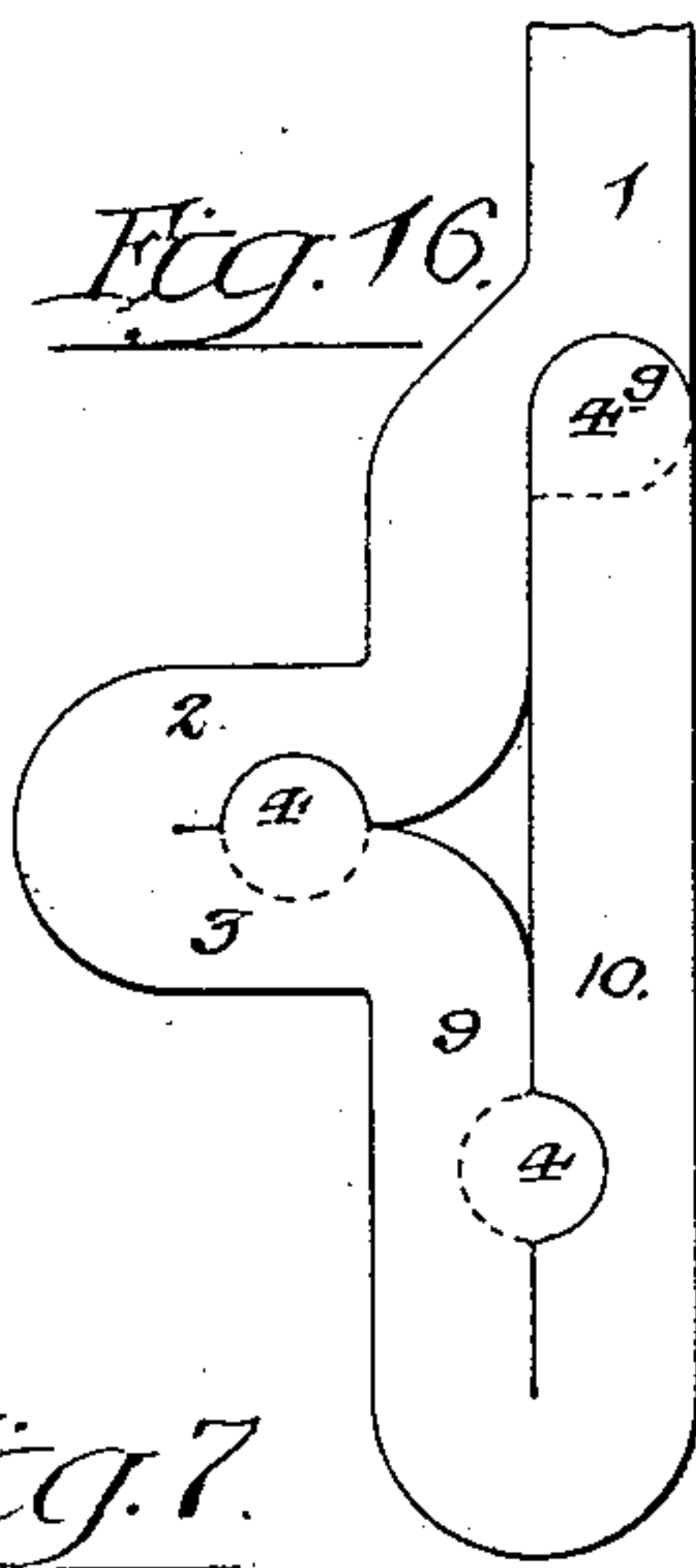


Fig. 8.

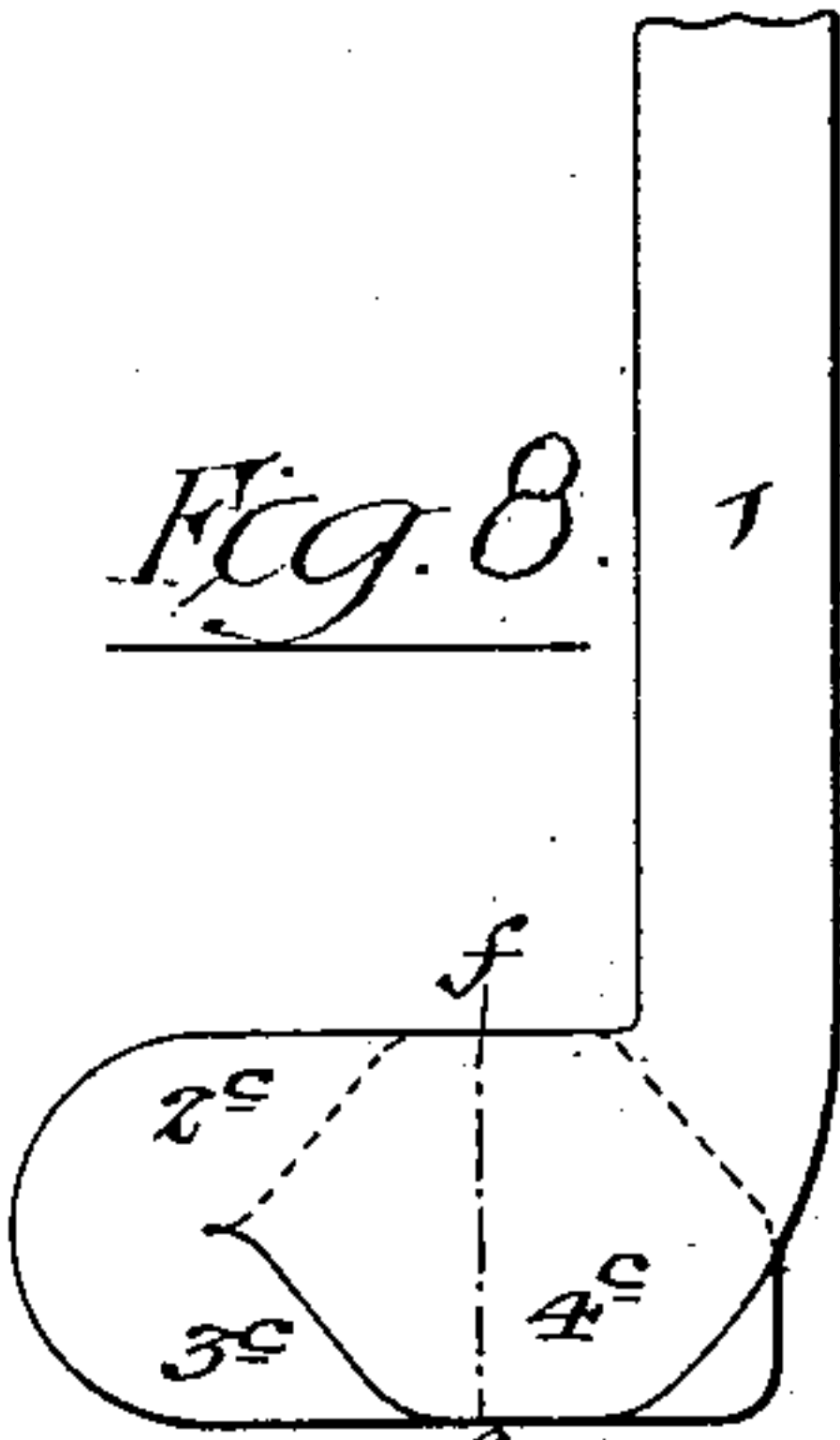


Fig. 9.

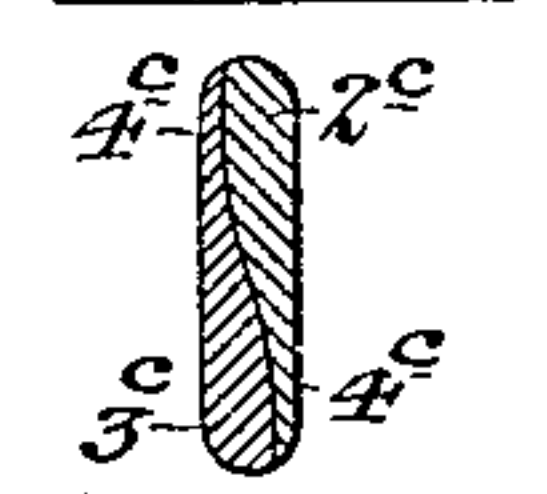


Fig. 10.

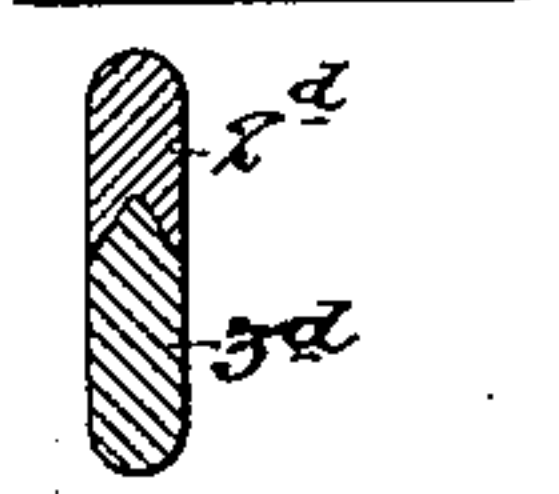


Fig. 7.

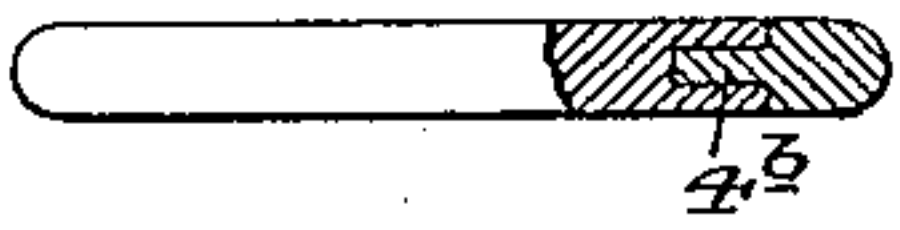


Fig. 12.

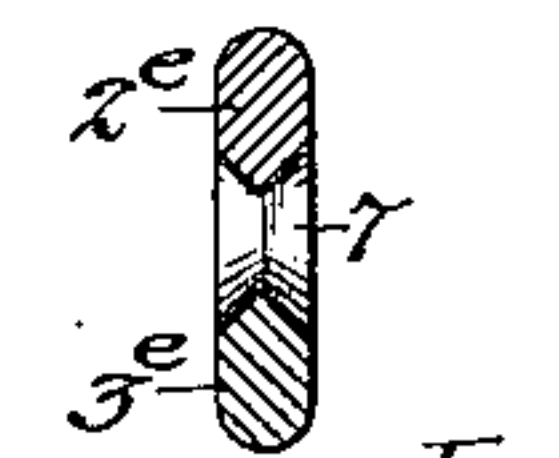


Fig. 14.

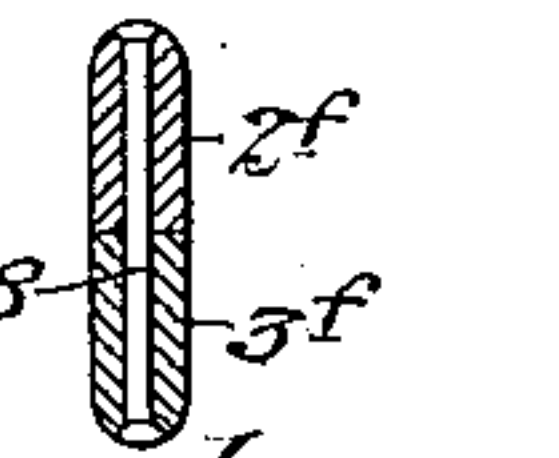


Fig. 11.

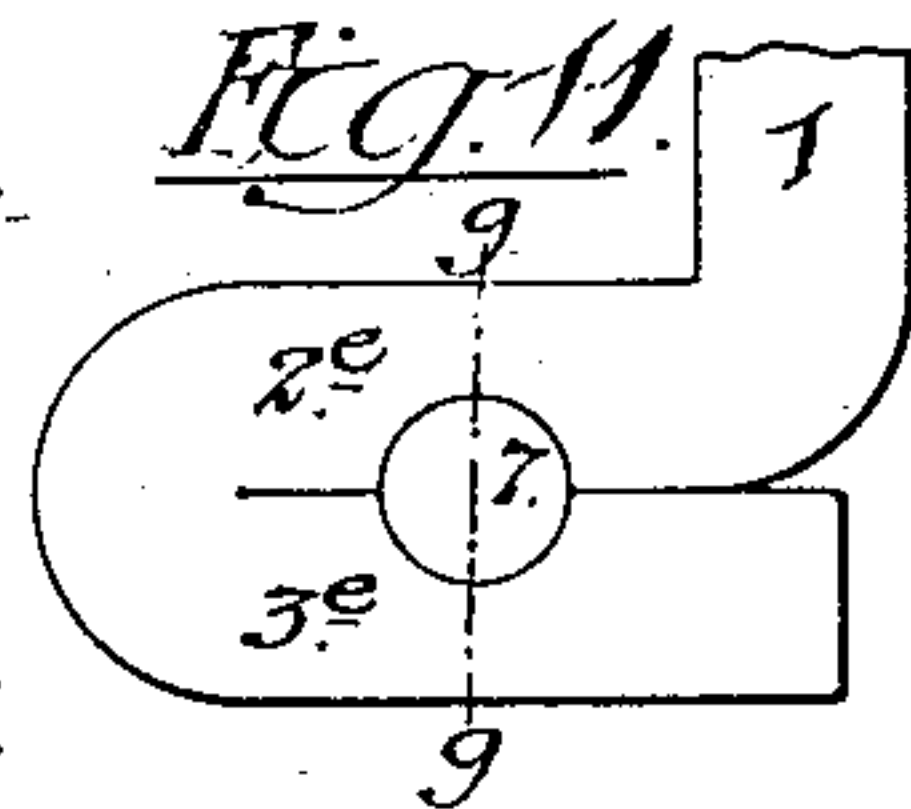
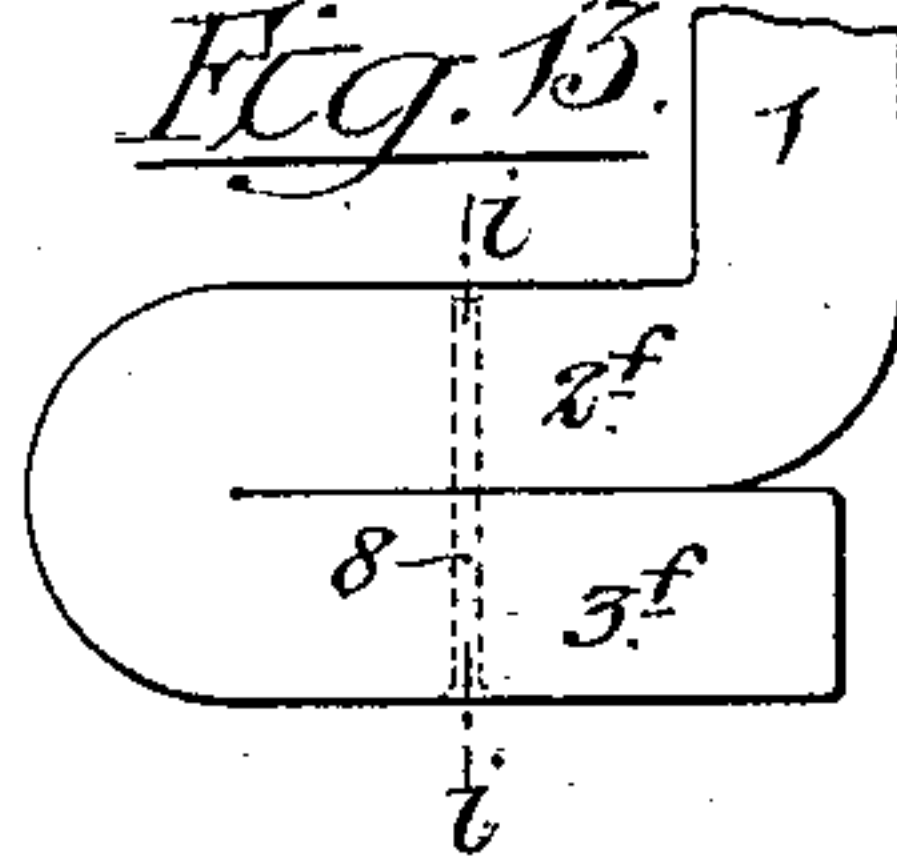


Fig. 13.



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by His Attorneys:

Howson & Howson



# UNITED STATES PATENT OFFICE.

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## KNITTING-MACHINE NEEDLE.

SPECIFICATION forming part of Letters Patent No. 677,806, dated July 2, 1901.

Application filed December 3, 1900. Serial No. 38,468. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Knitting-Machine Needles, of which the following is a specification.

My invention relates to that class of knitting-machine needles which have projecting butts coöperating with cams or other elements  
10 of the mechanism of the machine and formed upon the stem or shank of the needle by bending a portion of said stem or shank, the object of my invention being to so construct such needle-butts that they will be better calculated than usual to resist the wear and  
15 strain to which they are subjected in use.

As knitting-machine needles are at present constructed the wire of which the stem or shank of the needle is composed is doubled  
20 upon itself, so as to form a projecting butt, and then flattened to fit in the groove of the needle-cylinder. The primary member of the butt—that is to say, the member which rises directly from the stem of the needle—receives  
25 little or no support from the secondary or reversely-bent member, which being free, except at the bend at the outer end of the butt, yields to lateral thrust. Hence the greater part of the wear and strain upon the butt are  
30 necessarily imposed upon the primary member of the same, with the result that the butts are frequently broken, the replacing of needles rendered defective from this cause being a serious tax upon the users of knitting-machines, especially those of the automatic or  
35 semi-automatic type in which the butts of the needles, besides engaging with the cams, whereby a reciprocating movement is imparted to the needles, also perform a function in the operation of picking the needles into and  
40 out of action during the narrowing and widening of the web.

Various means have been resorted to for effecting the intimate union of the members  
45 of the butt. For instance, these members have been secured together by soldering or brazing or have been encircled by a retaining and stiffening band, or the butt has been replaced by a separate member or so-called  
50 “jack,” usually of metal, in which the needle-shank was secured by means of solder;

but all of these plans are open to serious objection, either on the score of greatly-increased initial cost of the needle or the difficulty of maintaining absolute uniformity of length  
55 from the butt to the hook of the needle, which, as is well known to those skilled in the art, is necessary for the production of good results in any knitting-machine. At present, therefore, such devices have been practically abandoned and the simple needle, formed from  
60 wire with the butt bent up from the stem, is used in spite of the expense arising from the replacing of broken needles.

In many machines for producing seamless  
65 tubular fabrics with pockets thereon reciprocating as well as rotating movement of the operating parts is necessary, and the butts of the needles are subjected to the action of certain picking devices, whereby they are moved  
70 into or out of range of the cams of the machine, and the wear and thrust of both cams and picking devices are exerted sometimes upon one side of the butt and sometimes upon the opposite side of the same, and the strains  
75 upon the butt due to picking the same into and out of operative position are exerted upon the primary member in effecting one movement and upon the secondary member in effecting the other movement. Consequently  
80 unless the two members of the butt are laterally locked in some manner the strength and wearing qualities of the butt are that of the weaker member only.

With the view of overcoming the objections to knitting-machine needles as heretofore constructed I have devised a needle  
85 wherein the two members of the butt are locked in position laterally, preferably by engagement one with the other, without the necessity of any soldering or brazing together  
90 of said members, so that the butt is practically a unit and independent lateral movement or wear of either member is effectually prevented.  
95

In the accompanying drawings, in which all of the views are on an exaggerated scale, some, however, being on a larger scale than others, Figure 1 represents a side view of a  
100 knitting-machine needle having a butt thereon made in accordance with my invention. Fig. 2 is an enlarged transverse section on



the line *a a*, Fig. 1. Fig. 3 is an enlarged transverse section on the line *b b*, Fig. 1. Fig. 4 is a still more enlarged perspective view showing the first step in the formation of the needle-butt in accordance with my invention. Fig. 5 is a side view illustrating a method of locking the secondary member of the butt to the stem of the needle instead of to the primary member of the butt. Fig. 6 is a sectional view on the line *c c*, Fig. 5. Fig. 7 is a sectional view illustrating another modification of this idea. Fig. 8 is a side view showing another method of locking the primary and secondary members of the butt together. Fig. 9 is a transverse section on the line *f f*, Fig. 8. Fig. 10 is a section similar to Fig. 9, but illustrating another form of lock for the two members of the butt. Fig. 11 is a side view illustrating one form of rivet structure for laterally locking the two members of the butt. Fig. 12 is an enlarged transverse section on the line *g g*, Fig. 11. Fig. 13 is a side view illustrating another embodiment of the rivet idea. Fig. 14 is a transverse section on the line *i i*, Fig. 13; and Figs. 15 and 16 are side views illustrating the application of my invention to needles having a double shank or stem below the butt.

In Fig. 1 the stem or shank of the needle is represented at 1, the primary member of the needle-butt at 2, and the secondary member at 3, said primary member of the butt being formed by bending up the metal of the needle-stem at right angles thereto and the secondary member being formed by a reverse bend of the metal.

As shown in Fig. 1, each member of the butt has two projecting tongues 4, each of about half the thickness of the butt, these projecting tongues entering corresponding recesses in the other member of the butt, as shown in Fig. 3, with the effect of rigidly locking together the two members of the butt, so far as any lateral movement of either member independent of the other is concerned. The tongues 4 and recesses 5 can be readily formed upon the members of the butt at one operation by the action of suitable dies, while said members of the butt occupy a position at right angles to each other, as shown in Fig. 4, the subsequent bending in of the secondary member of the butt causing the interlocking of the tongues and recesses, as will be readily understood. It is not essential to the proper carrying out of my invention, however, that the two members of the butt should be interlocked with each other, as the secondary member of the butt may be interlocked with the stem or shank of the needle in some cases with good results. Thus, as shown in Figs. 5 and 6, the secondary member 3<sup>a</sup> of the butt is the uppermost and is grooved or notched at the end for engaging with the face of the needle-stem 1, which it overlaps sufficiently to provide the desired lateral locking engagement of the two, or the needle-stem may have a central

projecting tongue 4<sup>b</sup> for engaging with a central recess in the end of the secondary member of the butt, as shown in Fig. 7. Other means than that shown in Fig. 1 may also be adopted for locking together the two members of the butt. Thus in Figs. 8 and 9 I have shown a construction in which both members 2<sup>c</sup> and 3<sup>c</sup> of the butt are flattened, so as to overlap each other throughout practically the whole depth of the butt, as shown at 4<sup>c</sup>, Fig. 9, and in Fig. 10 I have illustrated a construction in which a V-shaped groove in the under side of the member 2<sup>d</sup> of the butt receives a corresponding V-shaped rib upon the upper edge of the member 3<sup>d</sup> of said butt.

In all of the structures thus far described the locking elements are formed from the metal of the needle itself; but my invention in its broader phases can be embodied in a needle in which the locking means comprises a separate element—for instance, a transverse rivet 7, engaging countersunk recesses formed in the adjoining faces of the members 2<sup>e</sup> and 3<sup>e</sup> of the butt, as shown in Figs. 11 and 12, or a vertical rivet 8, passing through the members 2<sup>f</sup> and 3<sup>f</sup> of the butt, as shown in Figs. 13 and 14. In all such cases, however, the securing means are within the lateral dimensions of the butt formed by bending the needle-stem, so that the needle requires no more space in the machine than an ordinary needle, and hence can be used in machines of the finest gage.

In applying my invention to that class of needles which have a double stem or shank below the butt I preferably lock together the two members 9 and 10 of this double shank by means of engaging tongues and recesses similar to those of the butt, as shown in Fig. 15, or the secondary member of the double shank may also be locked to the stem of the needle, as at 4<sup>g</sup>, in that class of needles shown in Fig. 16, and in some cases this locking together of the members of the double shank may be the only lateral locking of the parts resorted to, as measurably good results might be attained even in such cases. It is always preferred, however, to lock together the members of the butt itself.

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

1. A knitting-machine needle having a projecting butt composed of primary and secondary members formed by bending the needle-stem, in combination with locking means within the lateral dimensions of the butt so formed for preventing lateral displacement in either direction, of either member of the butt in respect to the other, substantially as specified.

2. A knitting-machine needle having a projecting butt consisting of primary and secondary members formed by bending the needle-stem, in combination with means forming part of the metal of the needle itself for preventing lateral displacement in either direc-



tion, of either member of the butt in respect to the other.

3. A knitting-machine needle having a projecting butt composed of primary and secondary members formed by bending the needle-stem, in combination with locking means within the lateral dimensions of the butt so formed, for locking the members of the butt together against lateral displacement in either direction, substantially as specified.

4. A knitting-machine needle having a projecting butt consisting of primary and secondary members formed by bending the needle-stem, in combination with means forming part of the metal of the butt, for locking the members of said butt together against lateral displacement in either direction.

5. A knitting-machine needle having a projecting butt comprising primary and secondary members having laterally-engaging tongues and recesses for locking them together against lateral displacement in either direction.

6. A knitting-machine-needle blank having its stem bent to form, at an angle to each other, members of a projecting butt, said members having tongues and recesses adapted to interlock when the bending of the members of the butt has been completed.

7. A knitting-machine needle having a projecting butt and a bent and doubled shank below the same, said double shank being combined with means, within the lateral dimen-

sions of the shank so formed, for preventing lateral displacement of one member of said double shank in respect to the other.

8. A knitting-machine needle having a projecting butt and a bent and doubled shank below the same, said double shank having means, forming part of the metal of the shank, for preventing lateral displacement of one member of the shank in respect to the other.

9. A knitting-machine needle having a projecting butt and doubled shank below the same, both formed by bending the stem of the needle, in combination with means, within the lateral dimensions of the butt and shank so formed, for preventing lateral displacement of either member of the butt or shank in respect to the other.

10. A knitting-machine needle having a projecting butt and a doubled shank below the same, both formed by bending the needle-stem, in combination with means, forming part of the metal of the butt and shank, for preventing lateral displacement of either member of said butt or shank in respect to the other.

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

ROBERT W. SCOTT.

Witnesses:

F. E. BECHTOLD,  
JOS. H. KLEIN.