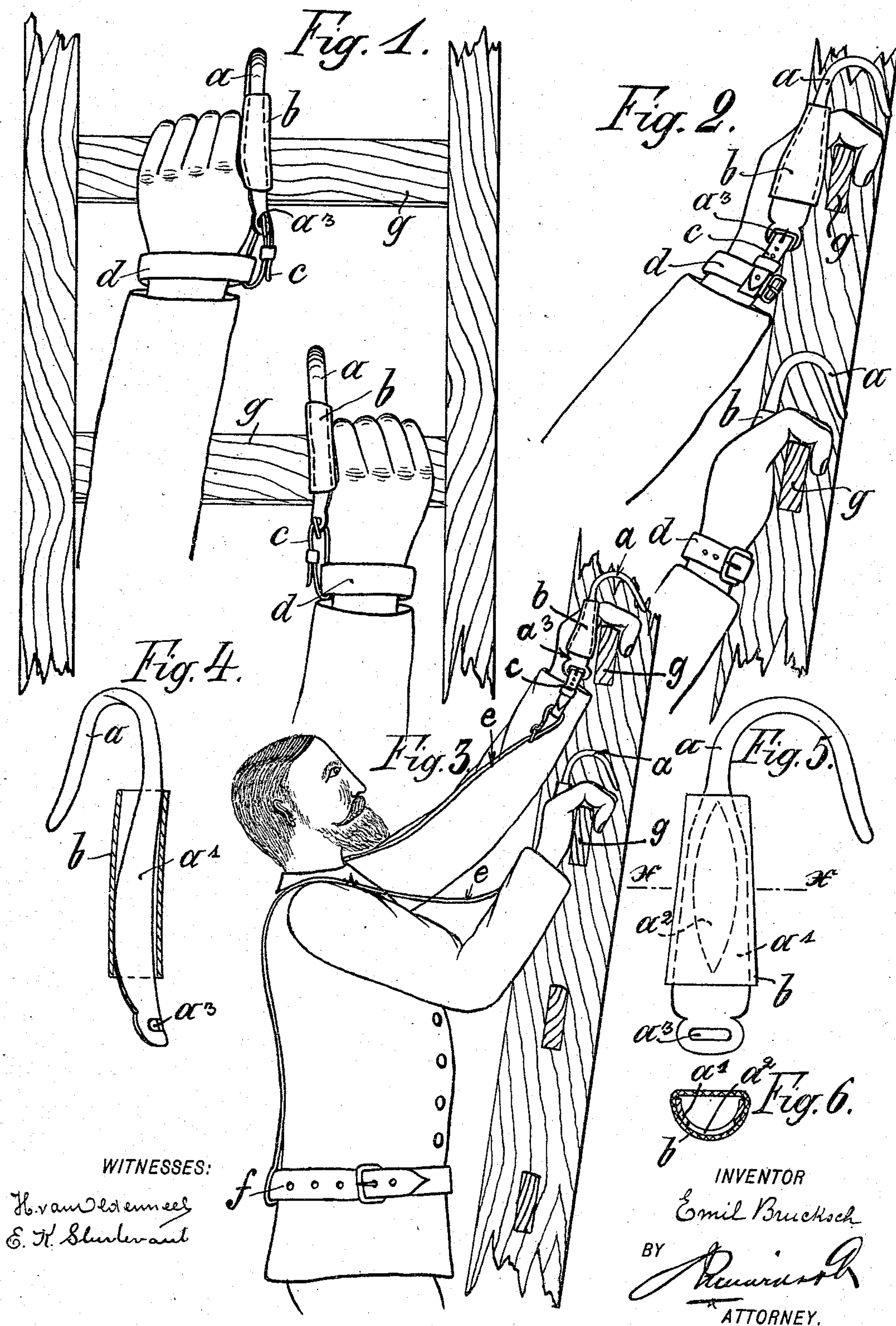


3 Sheets—Sheet 1.

# DEVICE FOR PREVENTING PERSONS FALLING FROM LADDERS.

Patented July 30, 1895.



(No Model.)

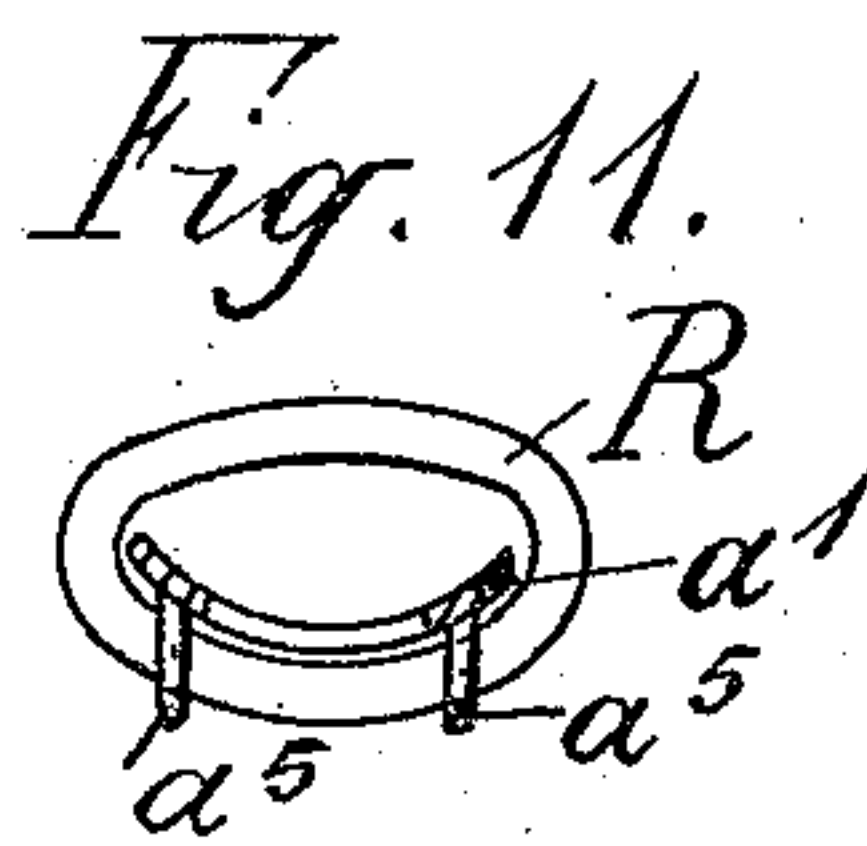
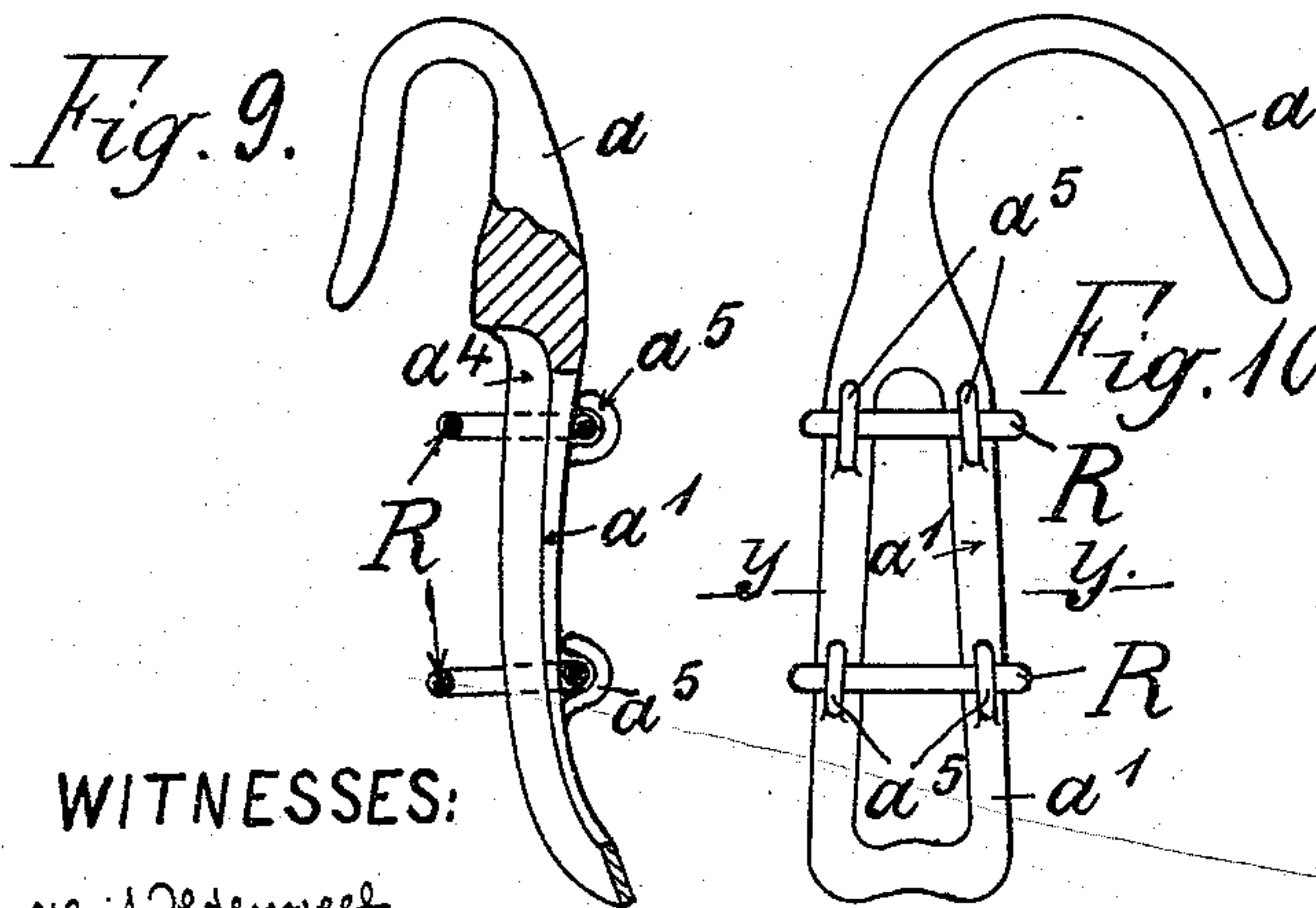
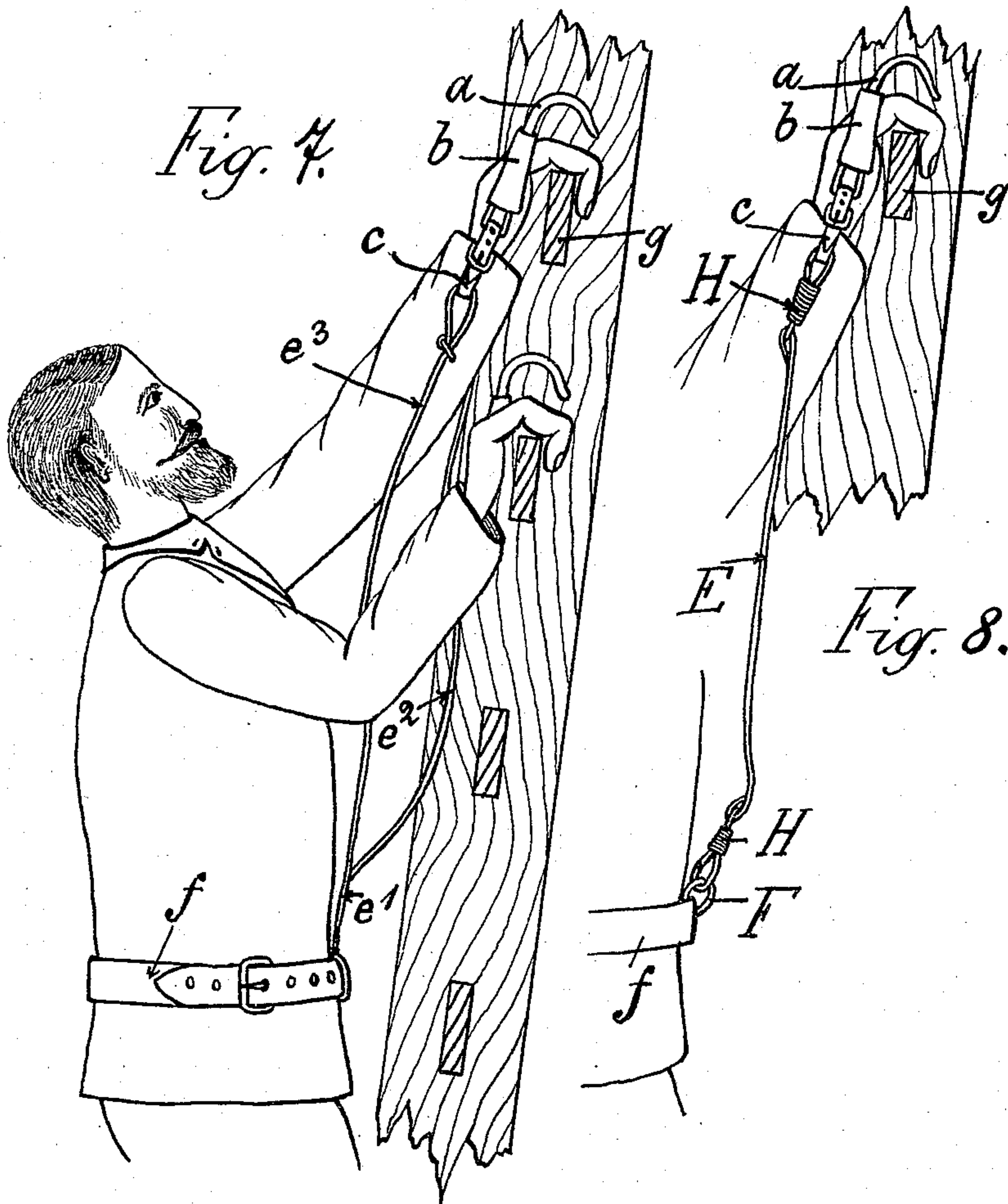
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E. BRUCKSCH.

DEVICE FOR PREVENTING PERSONS FALLING FROM LADDERS.

No. 543,464.

Patented July 30, 1895.



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(No Model.)

3 Sheets—Sheet 3.

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DEVICE FOR PREVENTING PERSONS FALLING FROM LADDERS.

No. 543,464.

Patented July 30, 1895.

Fig. 12. Fig. 13.

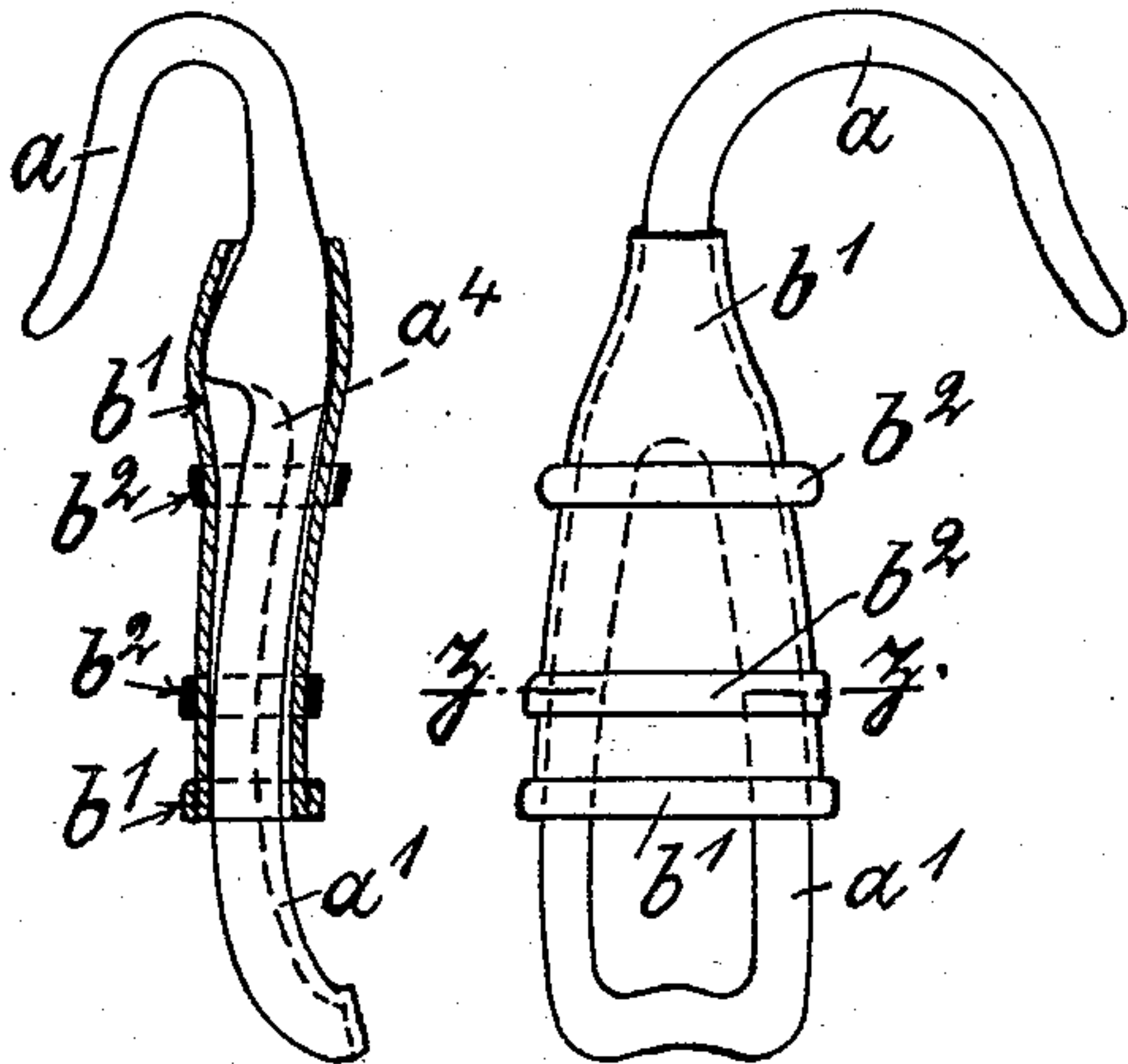


Fig. 15. Fig. 16.

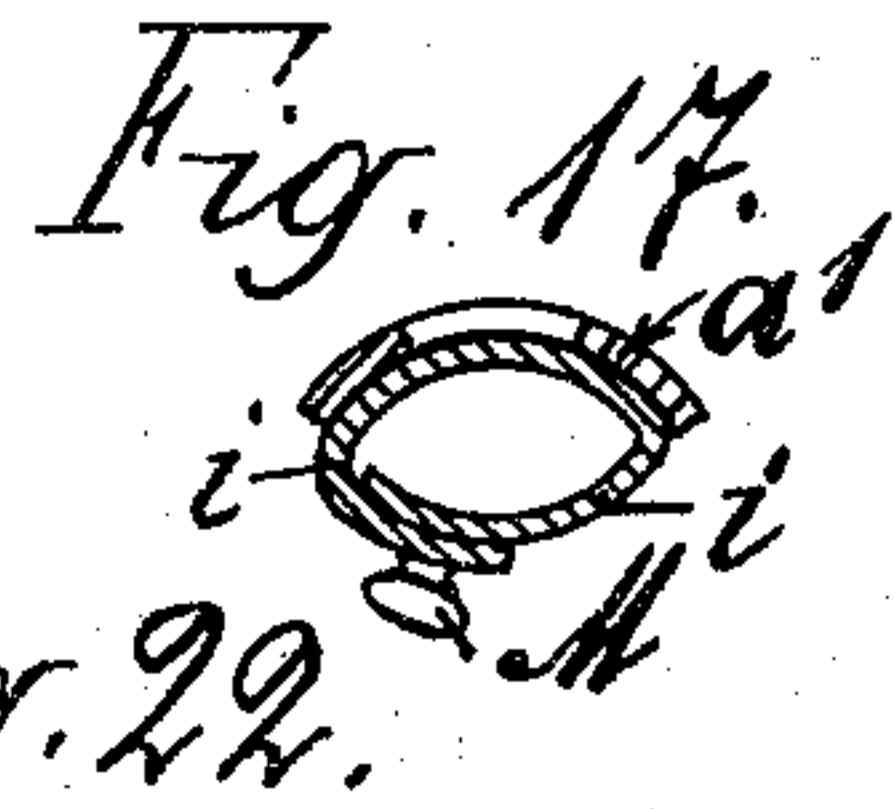
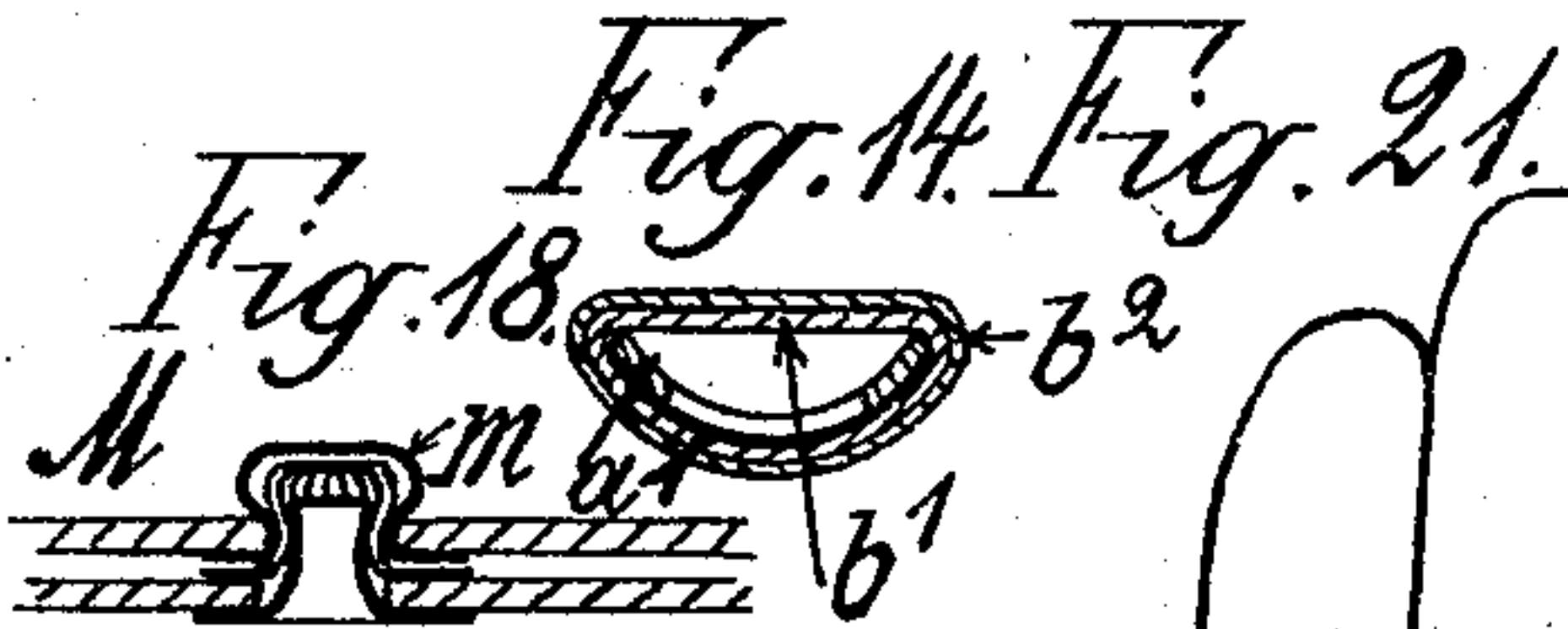
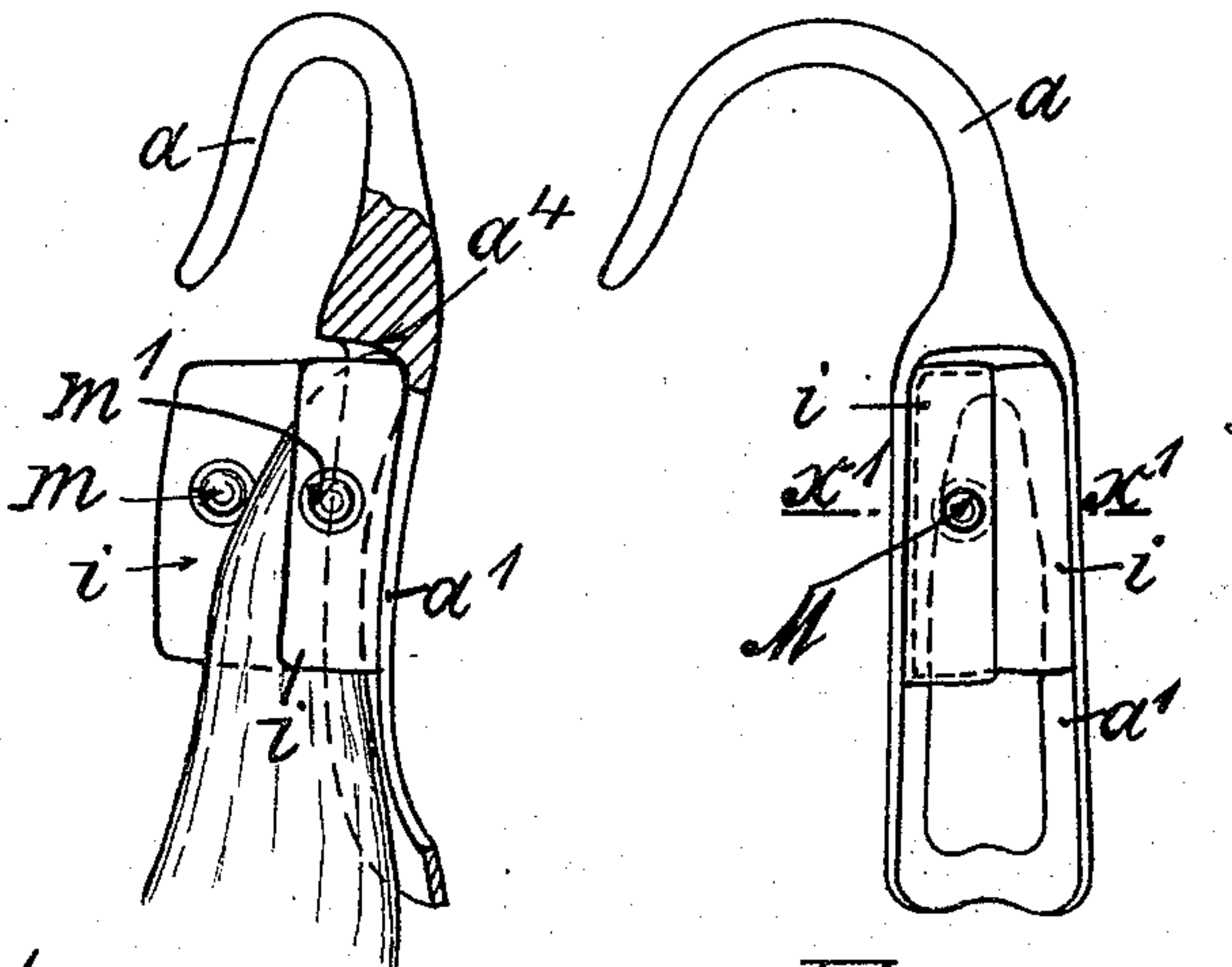
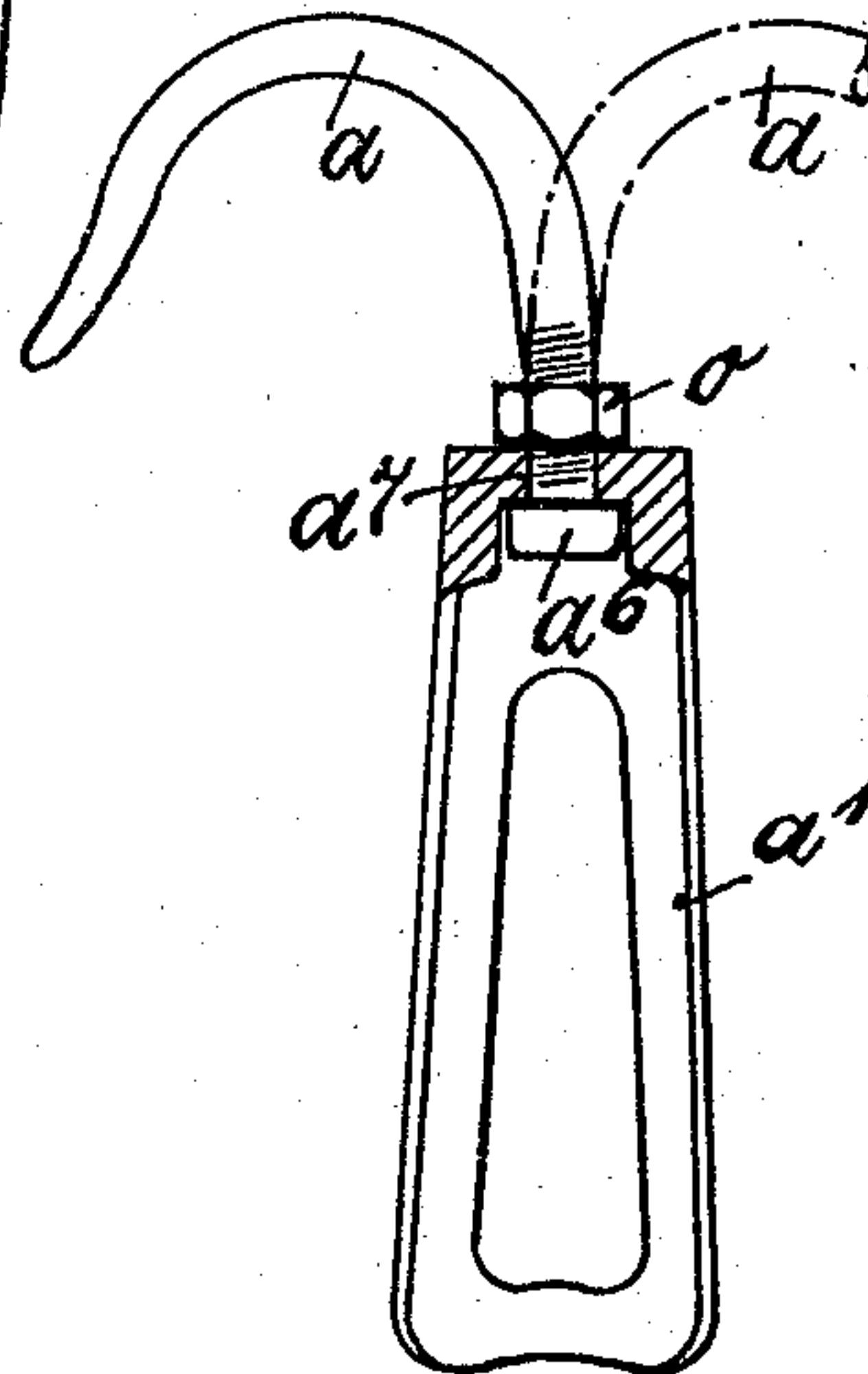
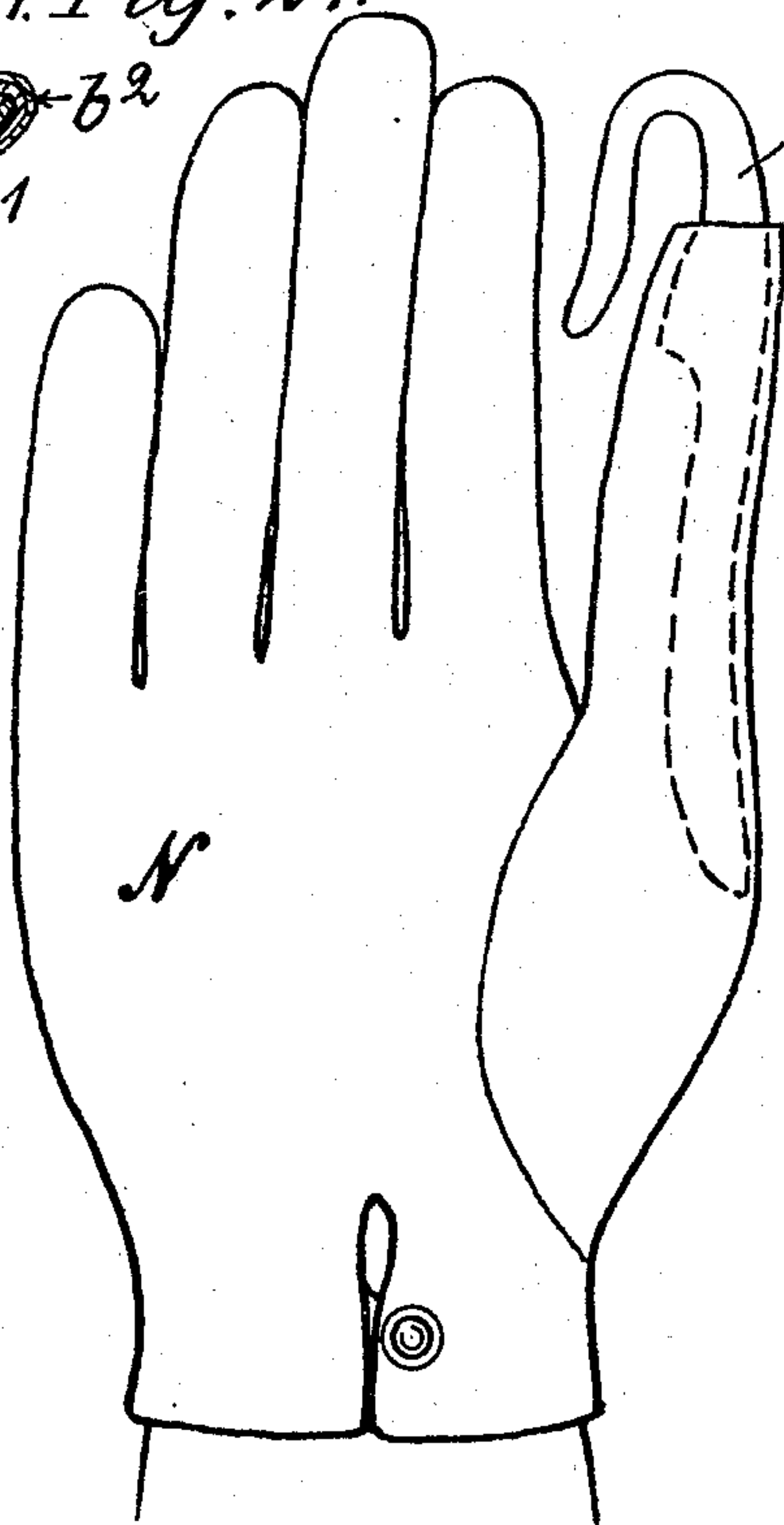


Fig. 19.



Fig. 20.



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# UNITED STATES PATENT OFFICE.

EMIL BRUCKSCH, OF NIEDERSCHÖNBRUNN, GERMANY.

## DEVICE FOR PREVENTING PERSONS FALLING FROM LADDERS.

SPECIFICATION forming part of Letters Patent No. 543,464, dated July 30, 1895.

Application filed December 28, 1894. Serial No. 533,181. (No model.)

*To all whom it may concern:*

Be it known that I, EMIL BRUCKSCH, mining-engineer, a subject of the German Emperor, residing at Niederschönbrunn, Province of Silesia, Kingdom of Prussia, German Empire, have invented a certain new and useful Device for Preventing Persons from Falling Down from Ladders, of which the following is a specification.

My present invention has for its object a device for preventing persons from falling down from ladders.

This invention has been caused by the circumstance that the thumb is inactive in frequenting ladders; and it consists, essentially, in hooks to be attached to the thumb of each hand in such a manner that they will come into such a position with reference to the steps of the ladder as soon as the four fingers touch the steps of it as to affect automatically these hooks to gear with the steps in case the person would not have sufficient support to stand. The latter circumstance occurs frequently in case the miners are young people or old people. In the first case it is the want of attention and in the second case the want of physical strength, which causes such inconveniences; but also miners of normal age may come into a difficult position in summer by reason of the change of temperature, which causes the miner to turn giddy; or in winter the fingers will become unserviceable by reason of cold, or also the boots or shoes will become slippery by moisture or snow. Moreover, the firemen, tilers, slaters, and the like will often come into the danger of falling down from ladders as high as a house, and my present invention enables also men of this kind to work without any danger.

On the annexed drawings I have represented several modifications of such a device.

By Figures 1 and 2 has been illustrated, in a partly front elevation and a partly longitudinal section, a ladder in combination with the arms of a person which frequents it. A modification of the attachment is shown by Fig. 3 in a longitudinal section. The hook itself has been represented by Fig. 4 in a side elevation, the shell surrounding it being cut longitudinally. Fig. 5 illustrates the hook and its shell, also in a side elevation, but both parts being

turned ninety degrees around its axis with reference to Fig. 4. Fig. 6 is a cross-section on the line  $xx$ , Fig. 5.

The hook  $a$  is provided with a trough-shaped shank  $a'$  in such a manner that the thumb may enter into the cavity of it. As it has been shown by dotted lines, Fig. 5, and by full lines, Fig. 6, this trough-shaped shank  $a'$  is preferably provided with a perforation  $a^2$  for the purpose to leave free the joint of the thumb. The shank  $a'$  is furthermore provided with a feathering-shell  $b$ , made from caoutchouc or the like, in order to prevent the thumb and the shank to move sidewise one against the other. The dislocation of this shank with reference to the thumb in the longitudinal direction may be obviated in one way or the other. According to Figs. 1 and 2 this purpose is reached by means of a strap of leather  $d$  to be put around the wrist and being attached to the shank  $a'$  by means of a keeper  $c$ , which is fastened by means of an eyelet  $a^3$  of this shank.

In case it is preferred not to make use of the wrist each keeper  $c$  may serve to attach one strap of leather  $e$ , these straps being attached to a girt  $f$  to be put around the body, as will be seen from Fig. 3.

I arrange the hooks  $a$  and the shank of it in such a manner that the plane of the hook proper  $a$  forms an angle of ninety degrees with the plane of the hand, supposed that the thumb has been stretched. The hook is furthermore curved in such a manner that the step  $g$  is lying in that way of the hook which it would run through in case the fingers would turn feeble. The hooks are of course not allowed to hinder the normal climbing of the miner, fireman, or the like.

Instead of making use of two straps of leather  $e$ , lying on the back of the person, there may also be made use of a Y-shaped strap of leather  $e' e^2 e^3$ , to be fastened by the branch  $e'$  to the fore part of the girt  $f$ , while the branches  $e^2 e^3$  are fastened to the keepers  $c$ , as will be seen from Fig. 7, which is a partial side elevation of a person frequenting a ladder, drawn in a longitudinal section. Fig. 8 is also a partial side elevation of a person frequenting a ladder, which is illustrated by a partial longitudinal section. According to this figure the girt  $f$  is provided with a ring



F for attaching the straps E to it by means of a spring-hook H. In the same manner may also be effected the fastening of the strap to the keeper c. In the latter case the spring-hooks H may also be large enough that the steps g may be caught by them after the hook a has been loosened.

The fastening of the hook a to the thumb may be varied in the following manner: As will be seen from Figs. 9 and 10, which show the hook in a longitudinal section and a side elevation, while Fig. 11 is a section on the line y y, Fig. 10, the shank a' may be provided with a globular cavity a<sup>4</sup>, which serves as a buttment of the thumb, while the feathering-shell of the hook or the substitute for it—the feathering-rings R—are drawn over the thumb. These rings R are fixed to the shank a' by means of circular tappets a<sup>5</sup>.

Fig. 12 is a side elevation of a hook, the shell of which has been shown by this figure in a longitudinal section. Fig. 13 is a front elevation of these two parts, and Fig. 14 a cross-section on the line z z, Fig. 13. According to these figures the shell proper b' is made from kid-leather, and it is provided with some rings b<sup>2</sup> made from caoutchouc.

Fig. 15 is a longitudinal section of a further modification, and Fig. 16 a front elevation, while Fig. 17 is a section on the line x' x', Fig. 16. In this case there has been fixed, by sewing or the like, to the shank a' a piece of leather i, large enough to inclose the outer limb of the thumb. The ends of this piece of leather are held together by means of a locking device as they are used in gloves. For instance, I have arranged a locking device M, as it has been known by the German Patent No. 37,984. Such a locking device M has been illustrated by Fig. 18 in a longitudinal section—that is to say, at a locked state—while Figs. 19 and 20 show the device at an unlocked state. One half of this locking device M consists of a non-elastic box m, Fig. 19, while the other half is a feathering-knob m', Fig. 20.

As will be seen from Fig. 21, the hook a may also be fastened to the thumb by means of a complete glove N.

Finally the hook proper a and the shank a'

may be joined together by means of a swivel. (See Fig. 22.) By such an arrangement the hook proper is enabled to be set in inactivity, as it will be required in some cases. For instance, that fireman who holds the mouth of the pipe must be provided with gloves, that his fingers don't grow stiff in winter; but he ought to have the fingers and also the thumb free after he has reached the normal position. Then he will fasten the strap of leather to the step of the ladder and turn the hook proper backwardly. I prefer to fix the hook to its shaft by means of a nut o, screwed upon that part of the hook which is situated in the neighborhood of the shoulder a<sup>6</sup> of it. This hook is supposed to have been bent after it has been passed through the boring a<sup>7</sup> of the shank a'.

Such a device will be very useful for mines provided with apparatus for descent and ascent of men in a pit.

What I claim, and desire to secure by Letters Patent, is—

1. A device for preventing persons from falling while climbing a ladder, comprising a hook having a connection for retaining it in proximity to and overhanging the hand leaving the hand free for use and a connection from the hook to the wearer, substantially as described.

2. A device for preventing persons from falling while climbing a ladder, comprising a hook having means for securing it to the thumb of the wearer with its upper end overhanging the hand, and a connection from the hook to the wearer, substantially as described.

3. A device for preventing persons from falling while climbing a ladder, comprising a hook, a sleeve or collar on the shank of the hook, arranged to slip over the thumb, and a connection from the hook to the body of the wearer, substantially as described.

Signed at United States consulate, city of Breslau, Province of Silesia, Empire of Germany, this 6th day of December, 1894.

EMIL BRUCKSCH.

Witnesses:

PAUL WOLFF,  
DAVID W. MCGEE.