

No. 616,176.

Patented Dec. 20, 1898.

H. ZIMMERMAN.
WIRE STRETCHER.

(Application filed May 17, 1898.)

(No Model.)

Fig. 1.

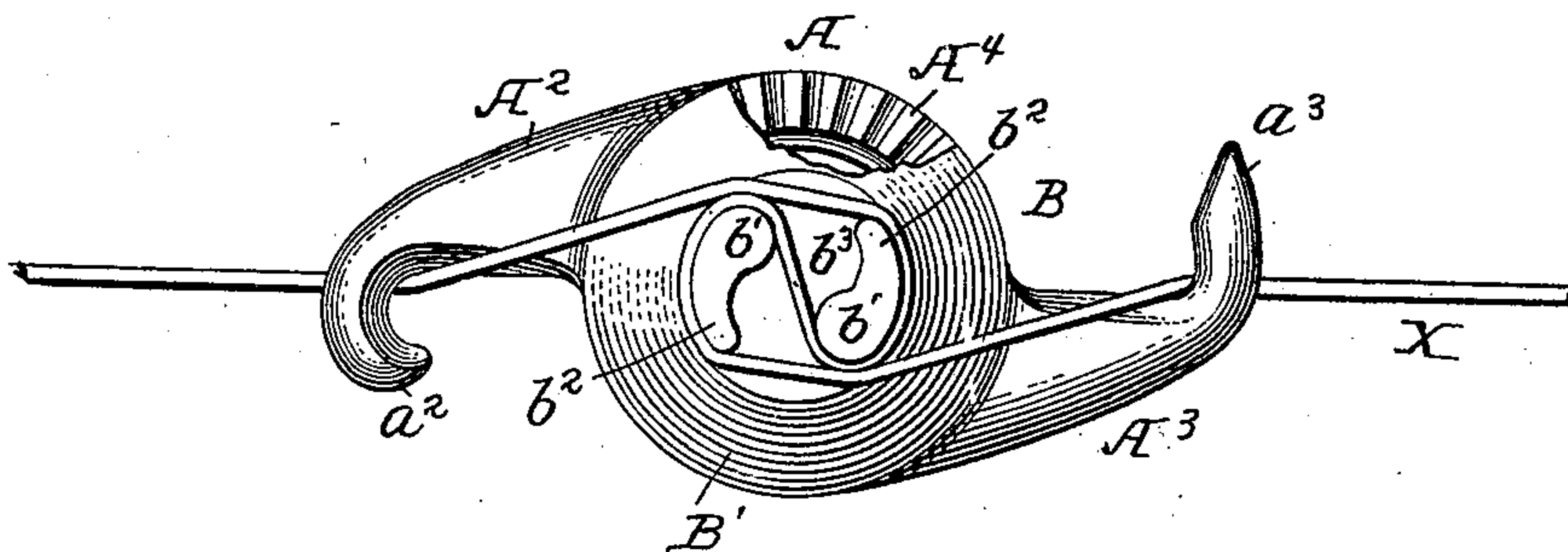


Fig. 2.

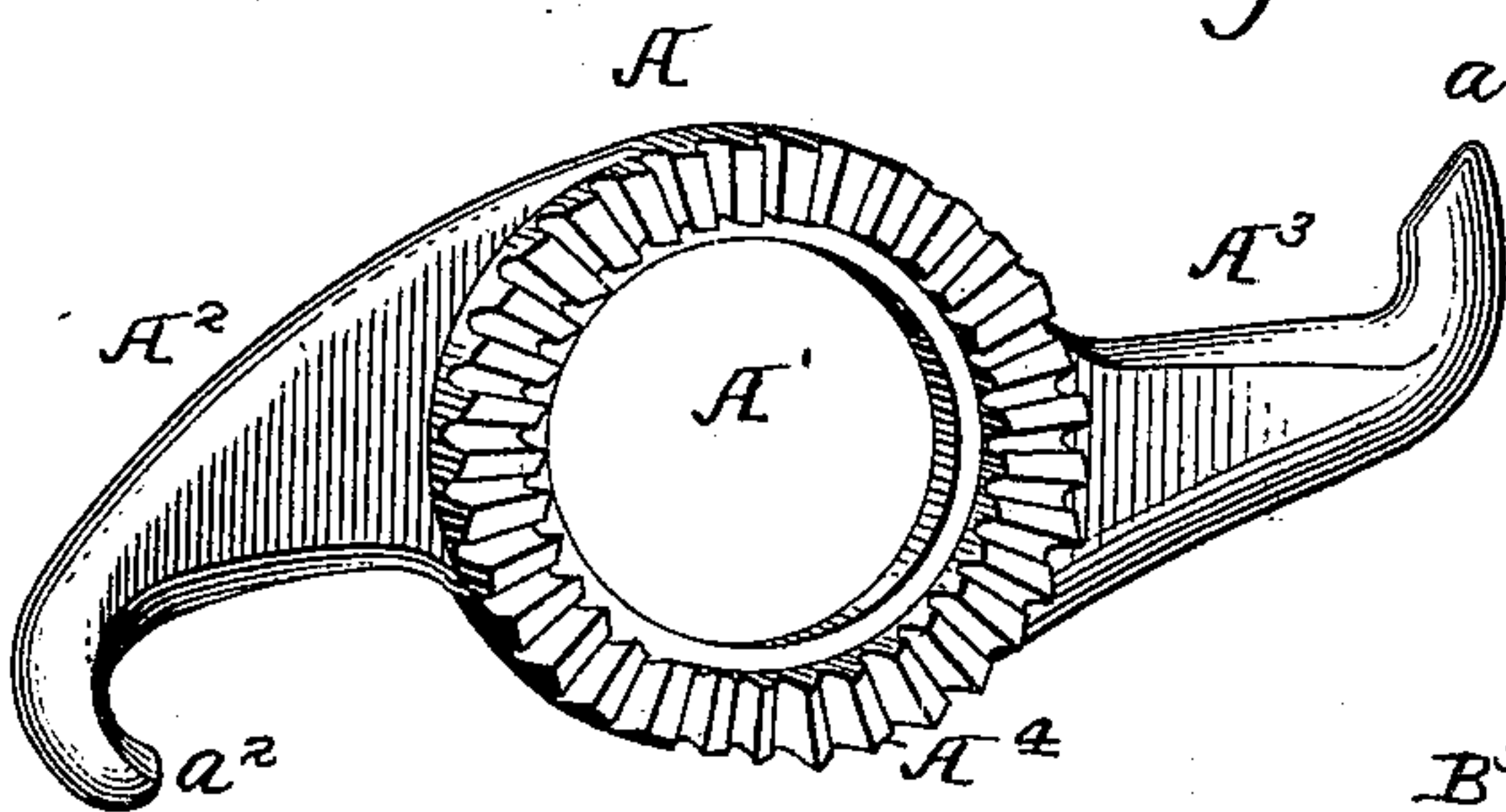


Fig. 3.

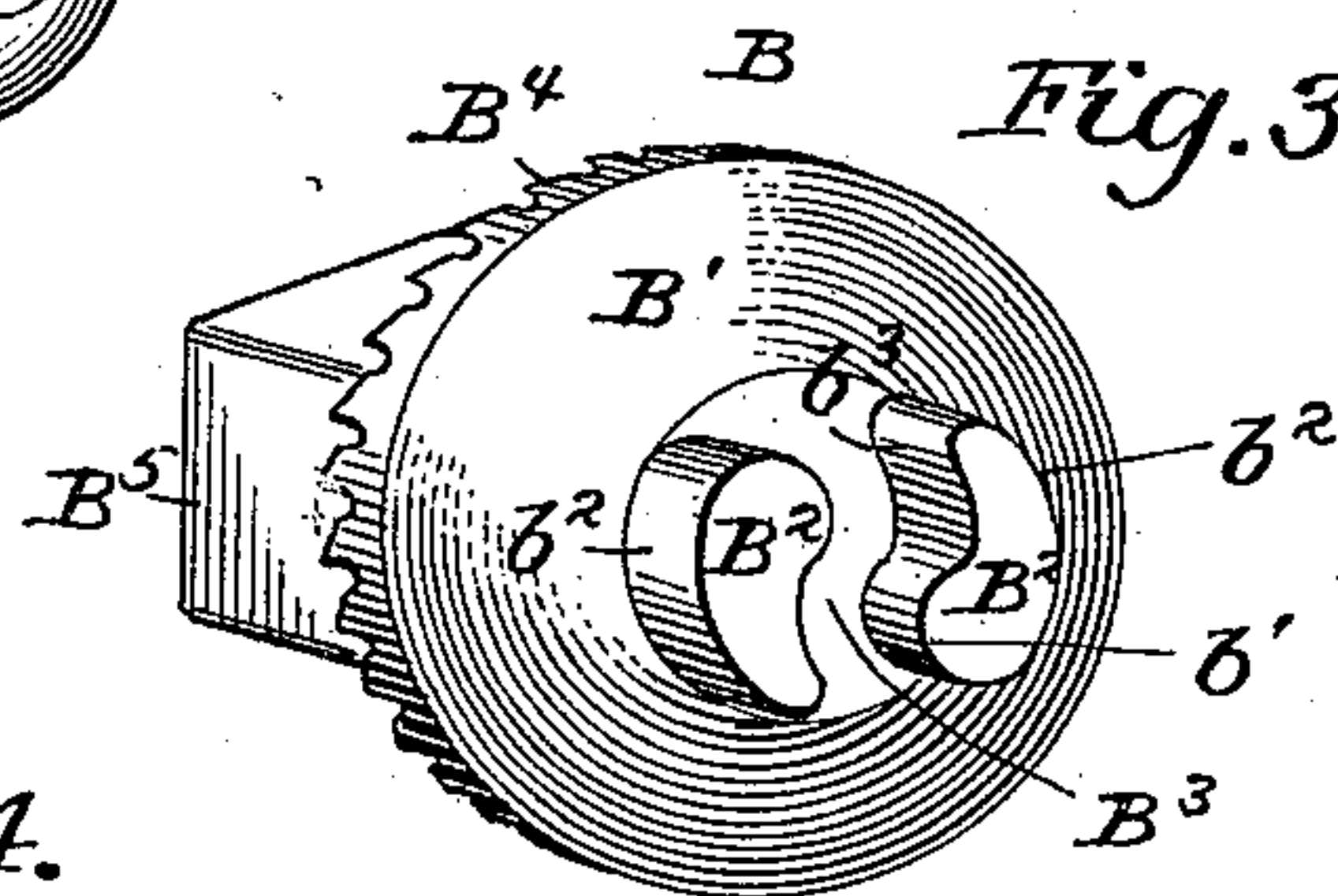


Fig. 5.

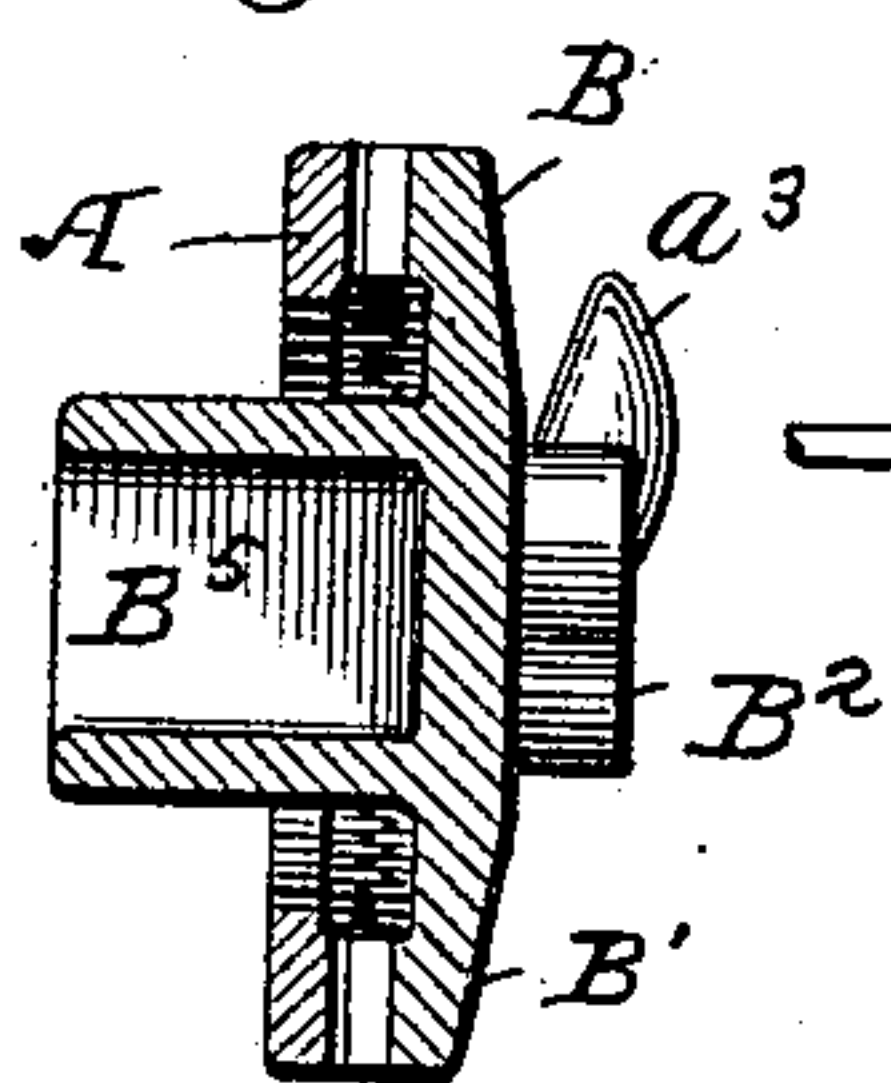


Fig. 4.

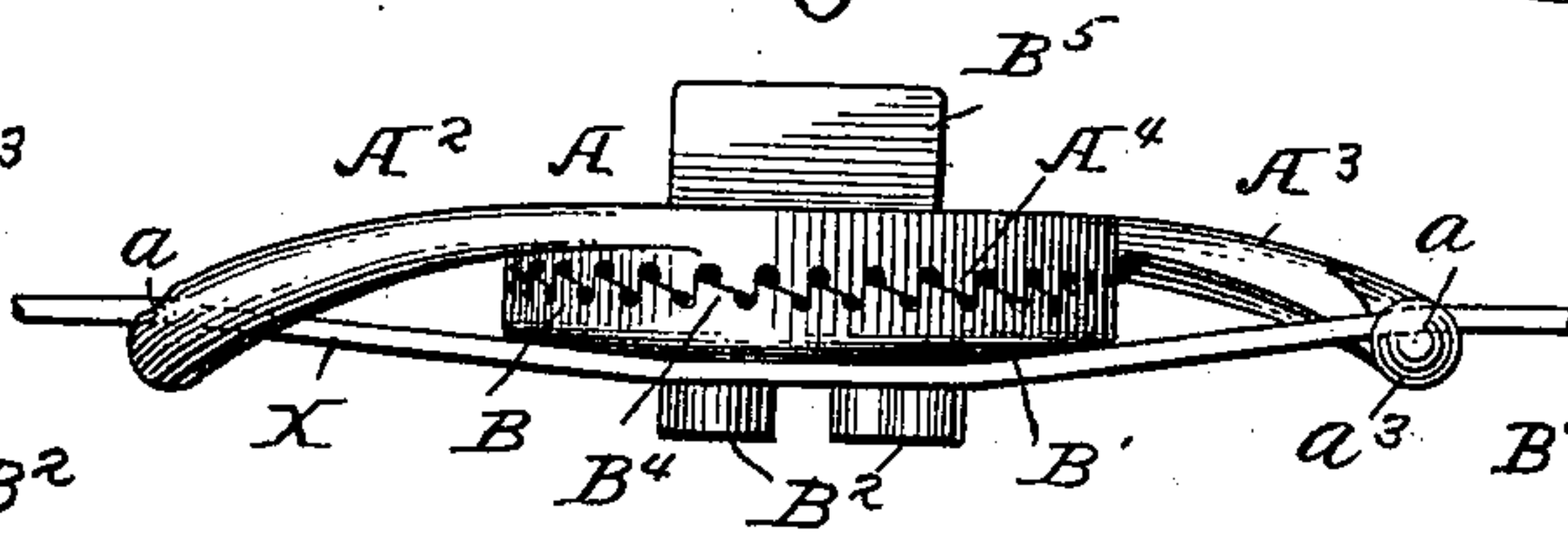


Fig. 7.

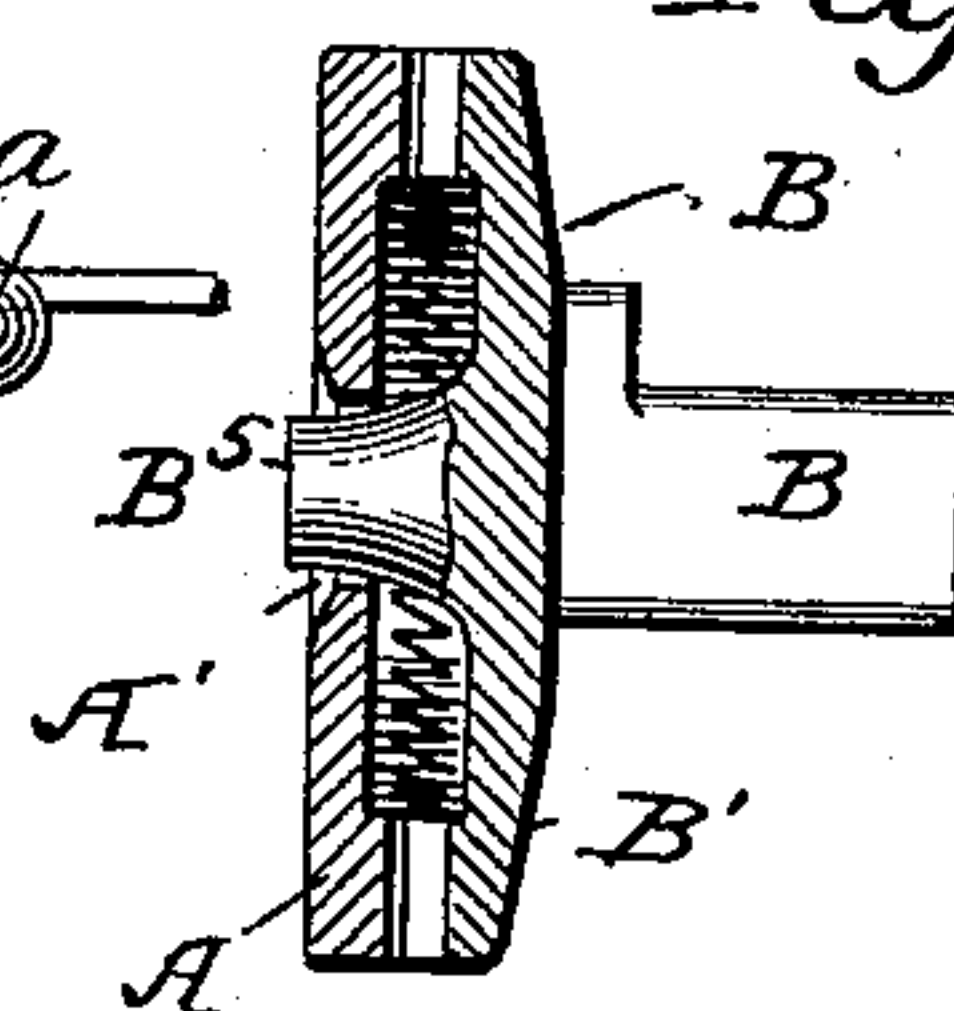
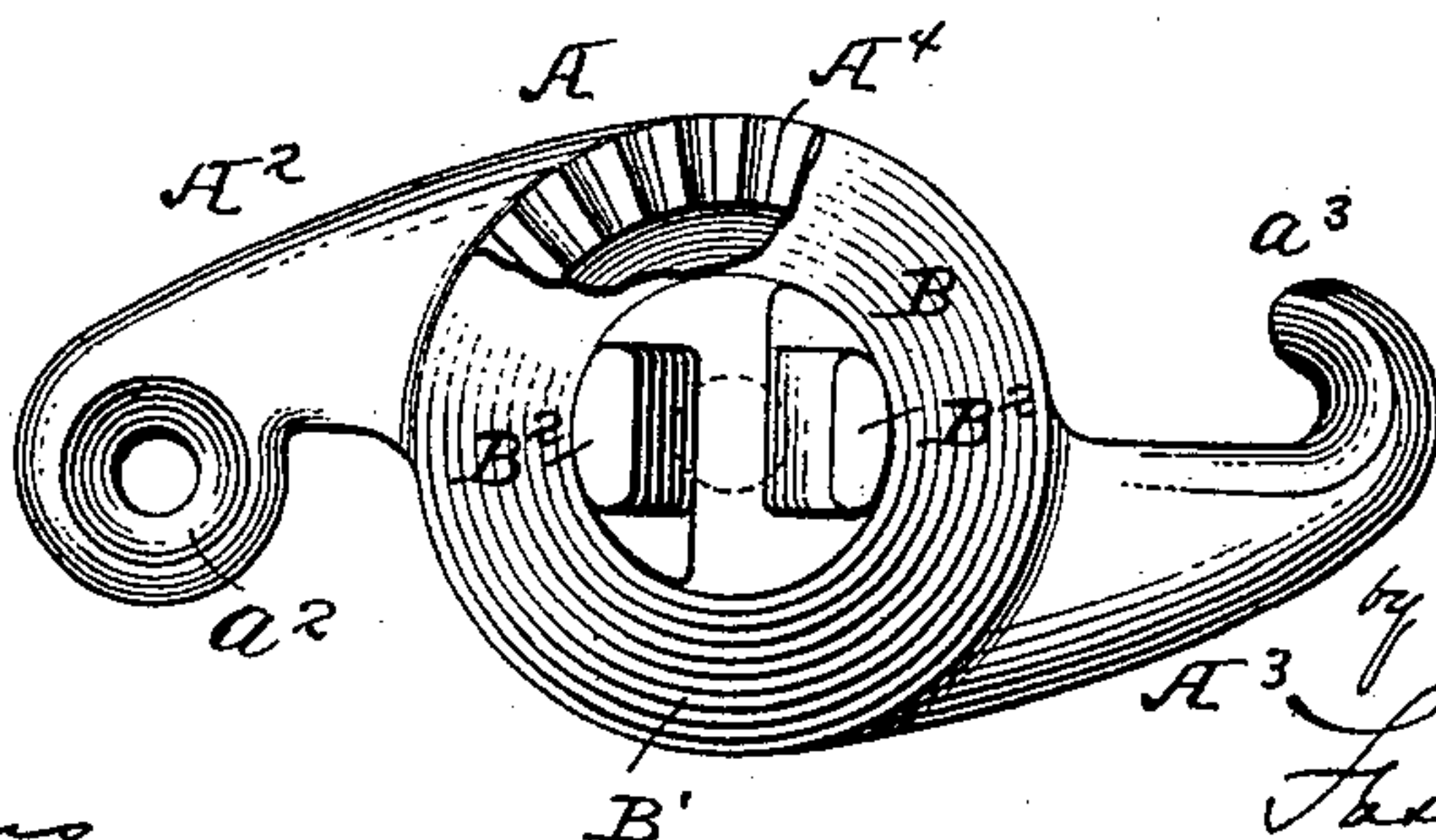


Fig. 6.



Witnesses

J. Hinkel
James H. Hinkel

Inventor

Harry Zimmerman

by *James H. Hinkel*
Attorneys

UNITED STATES PATENT OFFICE.

HARRY ZIMMERMAN, OF FREDERICK, MARYLAND.

WIRE-STRETCHER.

SPECIFICATION forming part of Letters Patent No. 616,176, dated December 20, 1898.

Application filed May 17, 1898. Serial No. 680,973. (No model.)

To all whom it may concern:

Be it known that I, HARRY ZIMMERMAN, a citizen of the United States, residing at Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful Improvements in Wire-Stretchers, of which the following is a specification.

My invention relates to wire-stretchers, and has for its object to improve and simplify the construction of this class of devices; and to these ends my invention consists of a stretcher embodying the various features of construction and arrangement of parts having the mode of operation substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, Figure 1 is a front view, parts being broken away, of the preferred embodiment of my invention, showing it applied to a wire. Fig. 2 is a perspective view of the bar or body portion. Fig. 3 is a perspective view of the winding-key. Fig. 4 is a top edge view of Fig. 1. Fig. 5 is a transverse sectional view. Fig. 6 is a front view of a slightly-modified construction, a part being broken away; and Fig. 7 is a transverse section of Fig. 6.

While my device is intended more especially as a wire-stretcher, it can of course be used for other purposes to which it is adapted, and while I will now describe in detail the embodiment shown in the drawings it is evident that the invention can be embodied in other forms, according to the requirement of any particular case, without departing from the spirit of my invention.

Referring to the drawings, A represents the body portion or bar, which is shown as having an enlarged central portion with an opening A' in its center and projecting arms A² A³, having hooked or bent portions at their extremities. These arms may be variously shaped, but are preferably curved slightly toward the face of the bar, as best shown in Fig. 4, and the hooks a² a³ on the respective arms preferably project toward the face of the ratchet-teeth and are bent so as to readily grasp the wire X or other material to be stretched and hold the stretcher in position, and, as shown in Fig. 1, this construction insures the arms A² A³ grasping firmly the wire, preventing the ratchet from unwinding, which will be more difficult to accomplish if

the hooks a² a³ project away from the face of the ratchet-teeth. It will be noticed that in the preferred construction illustrated in Figs. 1 to 5 the hook a² is curved nearly to half a circle, while the hook a³ extends more nearly at right angles to the general trend of the arm A³, and its end is preferably pointed, as shown, so that a² can be hooked onto a wire and secure that end of the ratchet which permits the point of a³ to be readily slid under a taut wire and into position, and both of the hooks are so shaped as to form depressions a to better receive and retain the wire or other material in the bite of the hooks.

I do not limit myself to any particular shapes or construction of the hooks a² a³, and it will be seen that either of the hooks a² or a³, or both, may be formed into a closed eye, as indicated in Fig. 6, through which the wire may be run, and the body portion A may thus be strung onto a wire or other material to which it is adapted, that would prevent it from becoming detached without sliding over the end of the wire.

On the face of the bar or plate A is a ring of ratchet-teeth A⁴, surrounding the opening A' and preferably cast or formed integral with the body.

The winding-key B comprises a disk having preferably a surface B', and extending from its central portion are the projections or studs B² B², having a passage B³ between them. The shape of these studs or projections may vary; but it is preferable to have their outer surfaces b² curved on a circle concentric with the outer surface of the disk, while the inner faces b³ are a sort of ogee shape, leaving a sinuous passage between them for the reception of the wire primarily, and, further, for the reception of a proper tool—as, for instance, a screw-driver or spanner—which can be readily applied for the purpose of operating the key. The thickened ends of the projections are rounded or curved inward, as at b', so as not to give too abrupt an angle to the wire extending between the lugs or projections. This particular shape of the lugs is of advantage over other constructions in that all the bearing-surfaces on the wire or other material stretched are curved or rounded, preventing any tendency to break the wire. The rear portion of the disk con-

stituting the winding-key is provided with a ratchet-ring B^4 , adapted to engage the ratchet-ring A^4 on the body, and it is also provided with an extension B^5 , which passes through the opening A' in the body and is preferably a hollow square, as shown in Fig. 5, and this may receive a tool or instrument for operating the winding-key, and further serves to maintain the winding-key generally in position, with its ratchet-teeth engaging those of the bar or body portion. The periphery of the winding-key B may be formed for a spanner-wrench or a pipe-wrench, which may be readily used for operating the key.

In Figs. 6 and 7 I have illustrated another embodiment of my invention, wherein the hooks $a^2 a^3$ are substantially the complements of each other and are of the same general contour as the hook a^2 in the first embodiment. This construction renders it less easy to apply the stretcher to a wire which is more or less taut, while the configuration of the hooks shown in Fig. 1 facilitates the application of the stretcher to the wire. In this embodiment the opening A' is of less diameter than that in the former construction, and the extension B^5 is rounded to more nearly fit the opening and serve as a guide for the winding-key. Moreover, the projections or lugs B^2 are of a slightly-different shape, although it will be seen that they embody generally the features of the projections previously described.

This being the general construction of the device, its operation will largely be understood and especially on reference to the drawings, and it will be seen that the hook a^2 is first applied to the wire. Then the wire is passed through the passage B^3 between the lugs B^2 and the hook a^3 applied in position. It will be seen that the curvature of the arms $A^2 A^3$ and the positions of the hooks $a^2 a^3$ are such with relation to the ring-like surface B' that when the stretcher is in position the wire X will be bent from its vertical plane, so that it tends to draw and hold the two parts of the stretcher together, as indicated in Fig. 4, and the ring-like surface B' is inclined, so as to conform substantially to the inclination of the wire between the hooks. As the winding-key is turned the wire is wound upon the lugs or projections B^2 and the slack thereby taken up, and it will be seen that each layer of wire wound upon the projections is superposed upon the other and also lies flat upon the inclined ring-like surface B' , so that there is no tendency to slip, and all the time there is a pressure exerted tending to cause the ratchet-teeth B^4 on the winding-key to engage and maintain their engagement with the ratchet-teeth A^4 on the body portion A . Of course the tighter the wire is drawn the stronger is this tendency for engagement, and I have found that I am enabled to make ratchet-teeth of comparatively small size, and by making them ring-shaped I am enabled to get a very strong and substantial engagement between the two parts of the stretcher with

relatively small teeth, the strain on the teeth being distributed through a number of different points.

When it is desired to remove the stretcher, pressure can be applied upon the extension B^5 sufficient to disengage the ratchet-teeth, and then the tension upon the wire will cause the parts to separate and the stretcher can be removed, although ordinarily, especially in wire fences and the like, it is often desirable to leave the stretcher in position, and it will be seen that once applied and the wire stretched the tension of the wire tends to hold the stretcher in position without danger of its being removed by accident or otherwise than by an intentional or forcible removal.

Without attempting to set forth all the advantages of my improved construction it may be said that the parts are simple and are easily made from cast metal or otherwise, and there are only two pieces, which are readily put together, and once put together are held in proper position by the wire. The curved arms, combined with the inclined face of the ring-like portion B' , is a very important feature, as by this arrangement and combination of parts the stretcher is held in its locked position without liability of being disarranged. By the use of the ring-like ratchets great strength and power of resistance are furnished by distributing the tension over many points of engagement. The peculiar shape and arrangement of the lugs are such that there is no tendency to break or disrupt the wire by producing sharp bends therein, and a ready means of operating the winding-key is furnished either by the use of a screw-driver engaging the inner surfaces of the lugs or by a wrench engaging their outer surfaces or a lever extending between the surfaces or a wrench to engage the extension B^5 or a spanner-wrench or pipe-wrench to engage the periphery of the winding-key B , so that any amount of tension desired can be readily put upon the wire or other material stretched.

What I claim is—

1. A wire-stretcher, comprising two parts, the body portion having arms and an annular ratchet, and the winding-key having lugs and an annular ratchet adapted to engage the ratchet on the body portion, substantially as described.

2. A wire-stretcher, comprising two parts, the body portion having arms bent toward the face of the body portion and having ratchet-teeth on said face, and the winding-key having a face, lugs, and ratchet-teeth engaging the ratchet on the body portion whereby when in position the tension on the wire tends to hold the ratchet-teeth in engagement, substantially as described.

3. A wire-stretcher, comprising two parts, the body portion having a ratchet-face and projecting bent arms provided with hooks projecting toward the face of the ratchet-teeth, and the winding-key having a face,

lugs, and ratchet-teeth engaging the ratchet on the body portion, whereby when in position the tension on the wire tends to hold the ratchet-teeth in engagement and the bent hooked arms harder against the wire, substantially as described.

4. In a wire-stretcher, a body portion having projecting arms provided with hooks, one being curved and the other extending substantially at right angles to the arm, substantially as described.

5. In a wire-stretcher, a body portion having projecting bent arms provided with hooks and having a ratchet-face, and a central opening in the body within the ratchet, substantially as described.

6. In a wire-stretcher, a body portion having a ratchet-face and projecting bent arms provided with hooks projecting toward the

face of the ratchet-teeth, substantially as described.

7. In a wire-stretcher, a winding-key having an inclined ring-shaped face and projecting lugs on one side and ratchet-teeth and an extension on the other side, substantially as described.

8. In a wire-stretcher, a winding-key provided with lugs having curved outer faces and double-curved inner faces furnishing a sinuous passage between the lugs, substantially as described.

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

HARRY ZIMMERMAN.

Witnesses:

GEORGE T. BAUMGARDNER,
FRANK C. NORWOOD.