

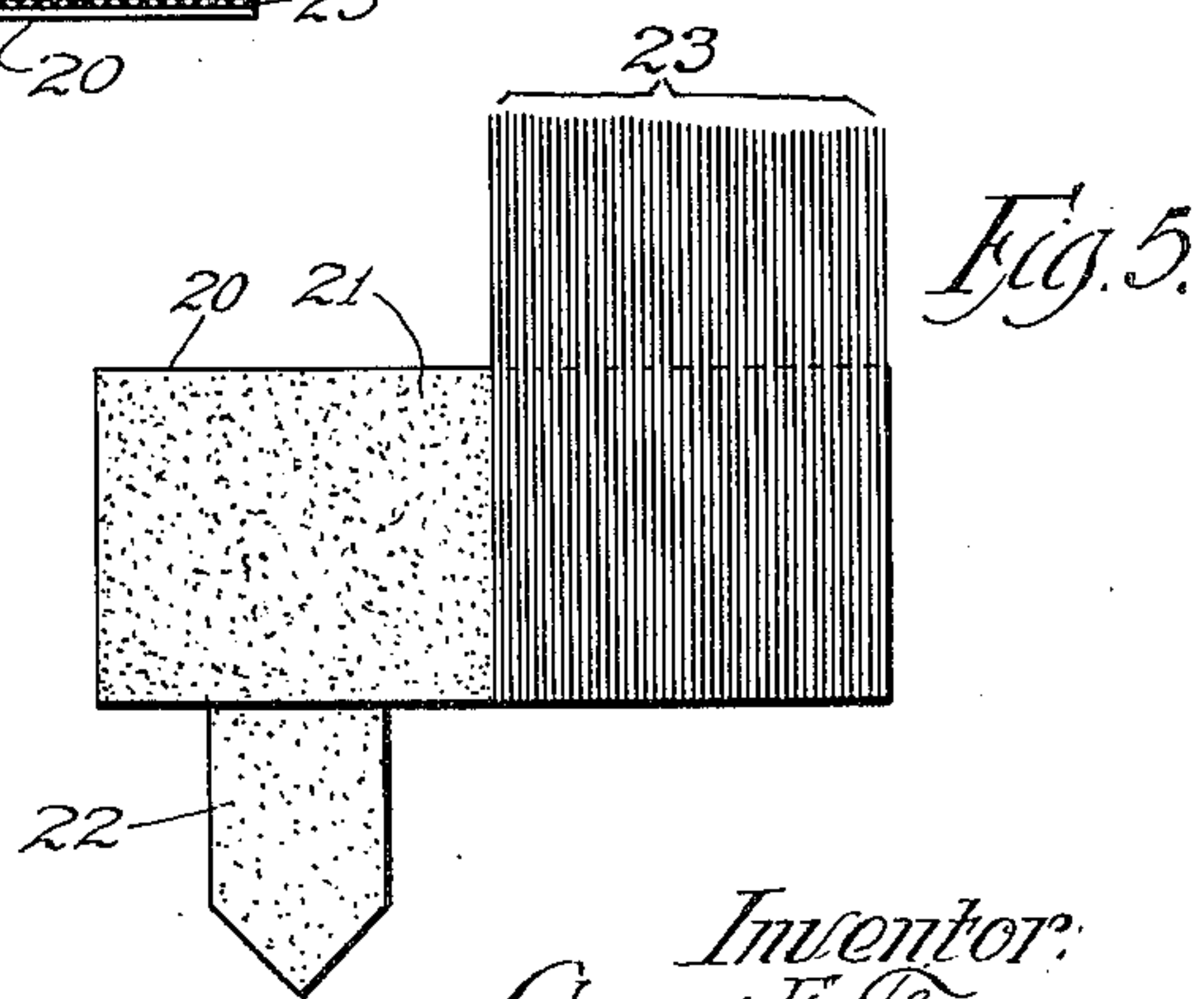
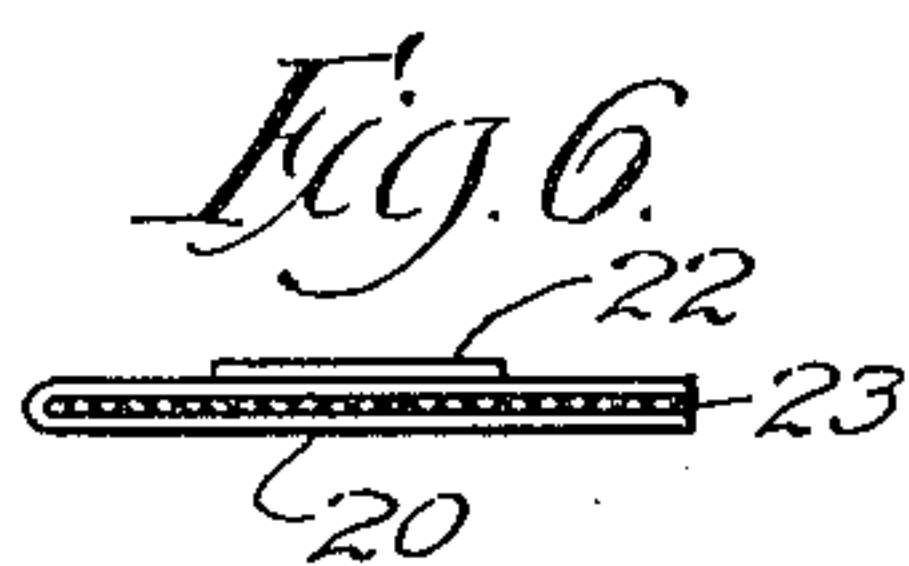
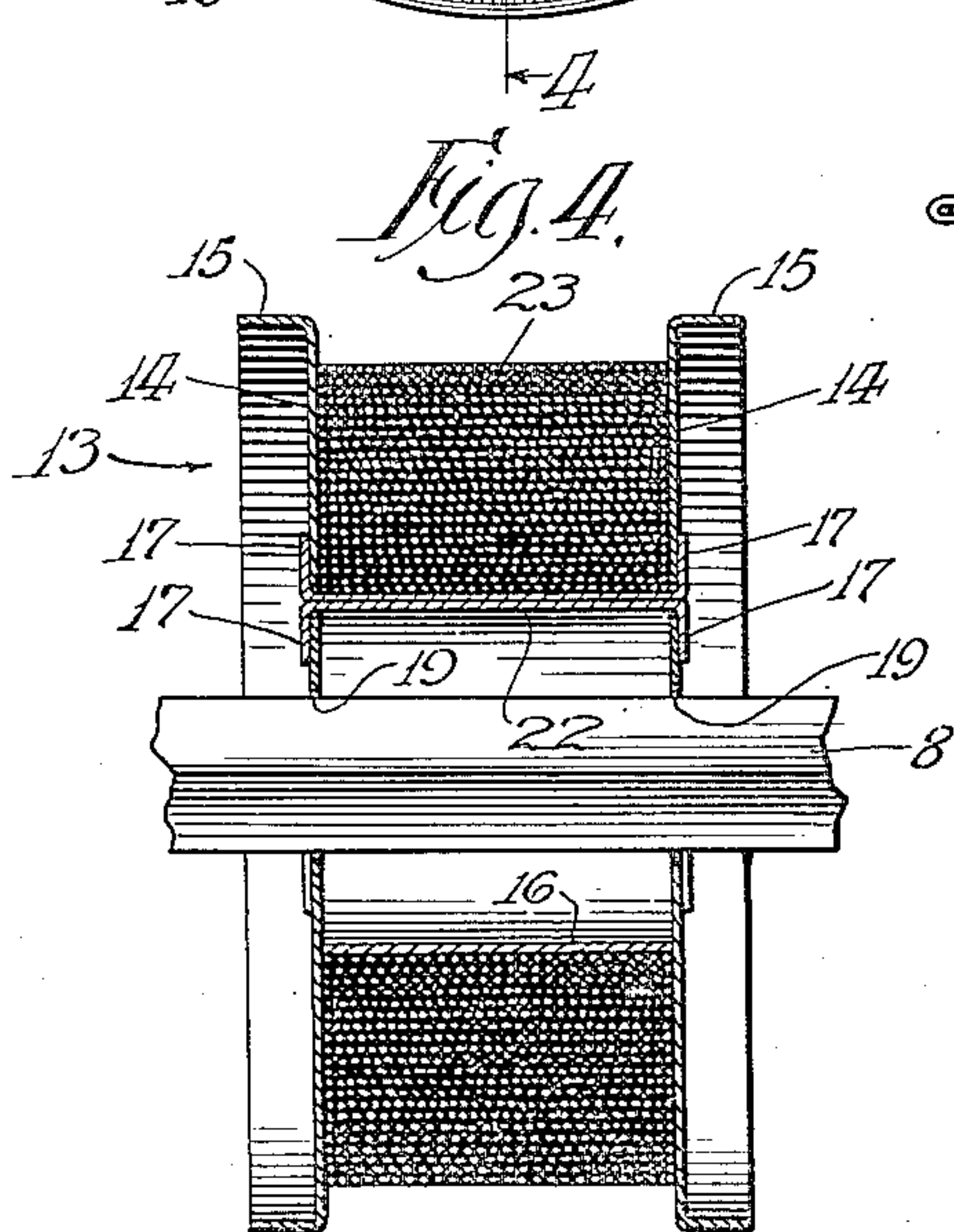
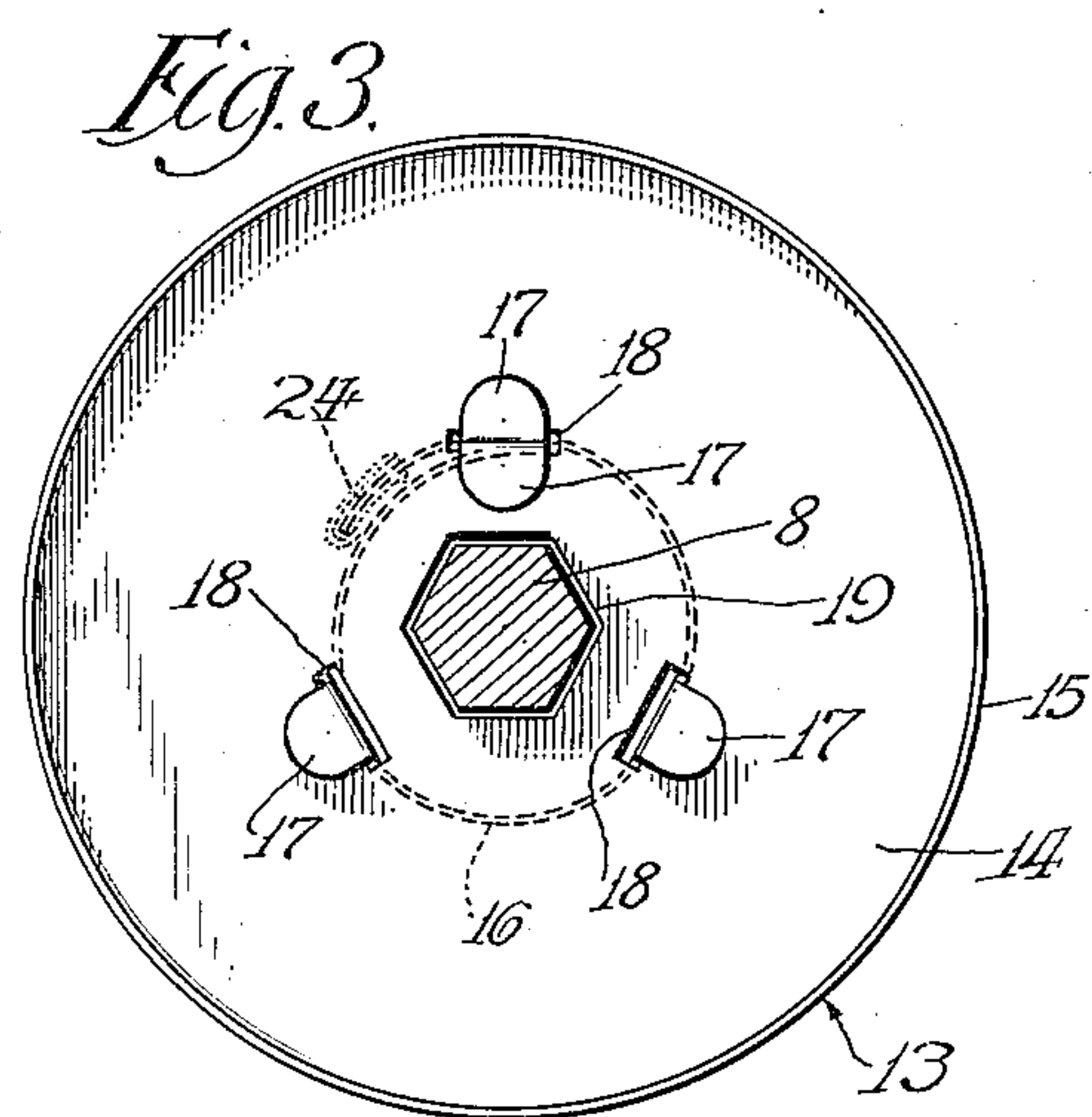
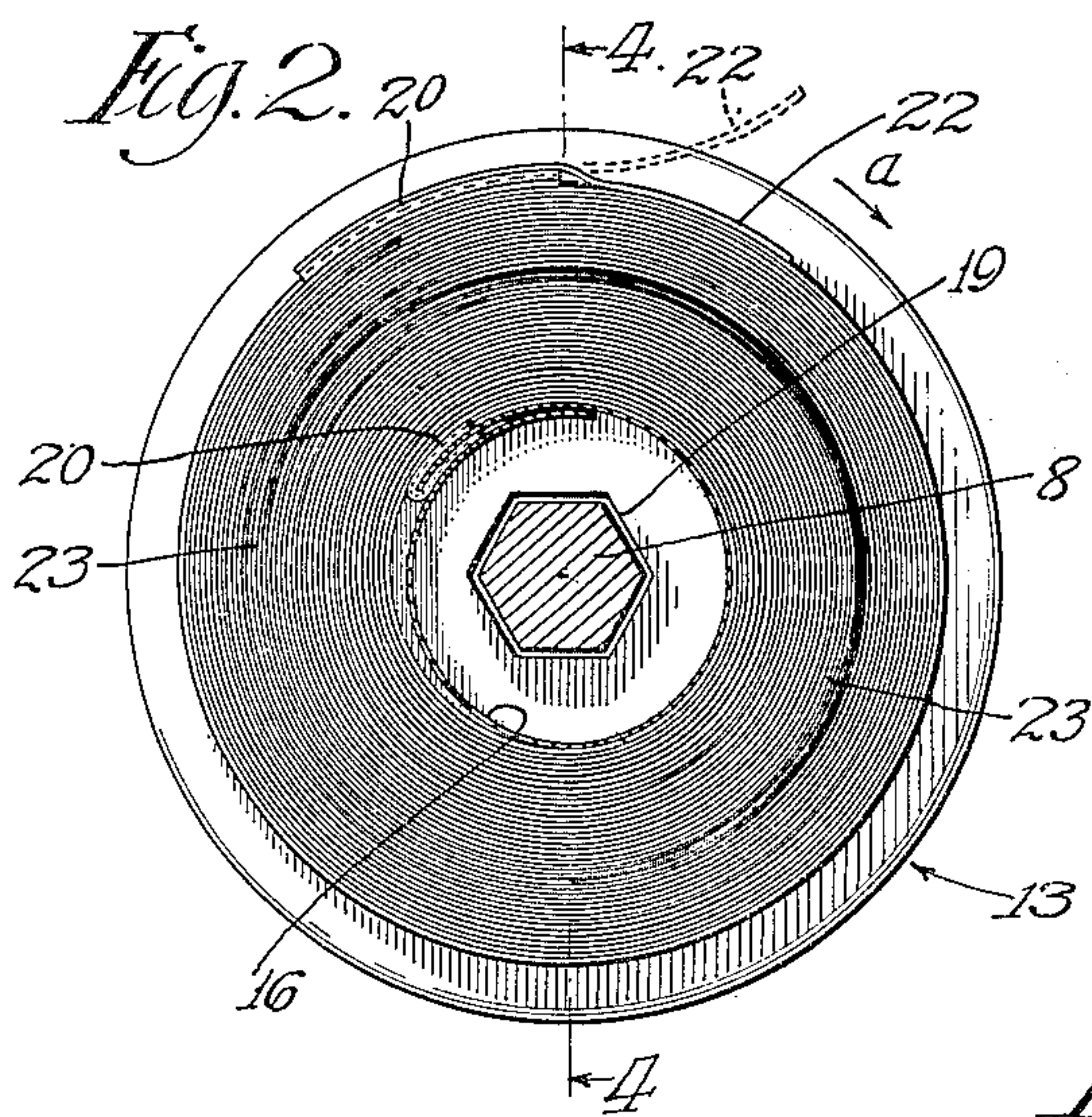
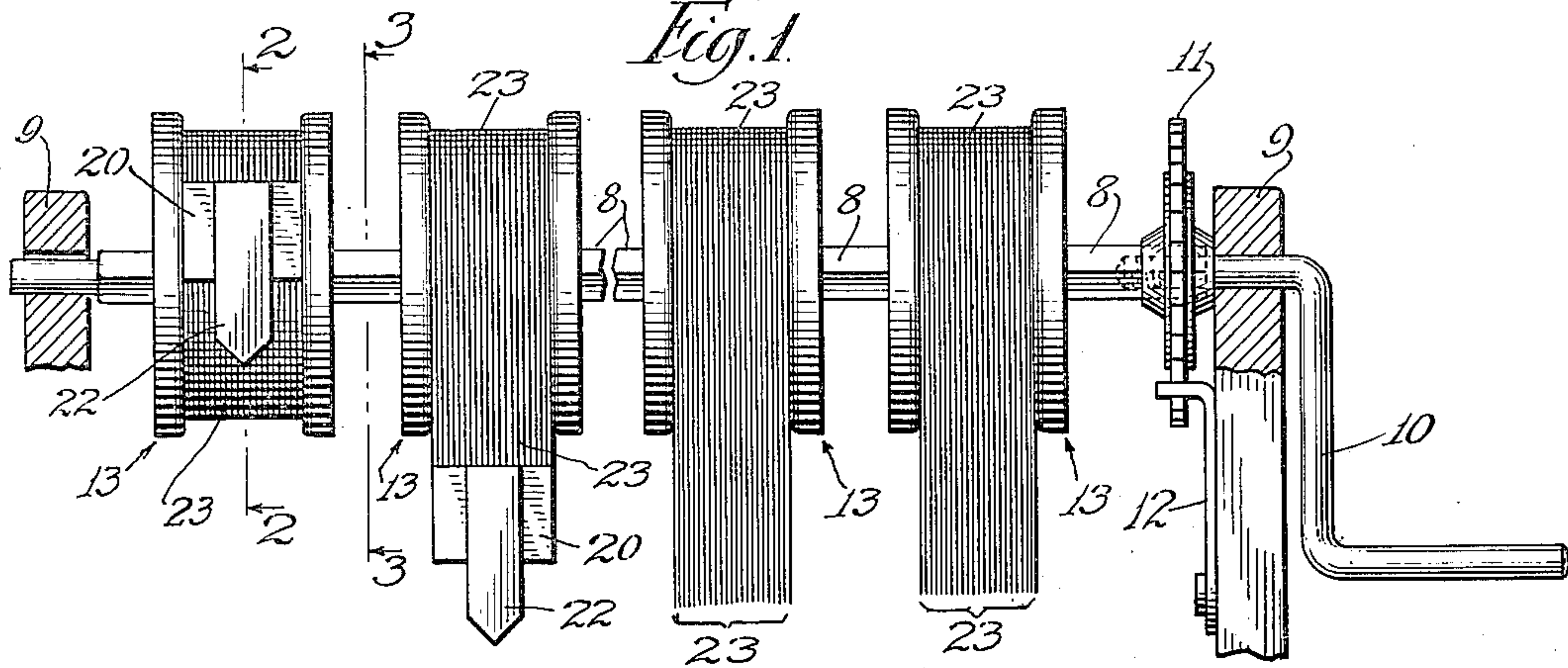
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C. E. THOMPSON

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SECTIONAL WARP BEAM

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SECTIONAL WARP BEAM

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This invention relates to warp beams for looms, and its principal object is to provide improved means for facilitating the threading, tightening and tying of the warp ends or threads.

Another object is to provide a warp beam in which any number of warp spools may be employed so as to provide the required number of warp threads for weaving any particular article. It is well known that much difficulty is encountered in threading, tightening and tying the warp ends on the cloth beam and that it is a common occurrence for the threads to become tangled and also for individual threads of the warp to become slack which results in a poorly made article.

I have overcome these difficulties by providing a warp beam composed of individually wound spools non-rotatably mounted upon a shaft carried by the framework of the loom and embodying warp spools having novel characteristics whereby the warp threads may be readily threaded through the heddles, evenly tightened and tied to the warp beam.

The invention consists, therefore, in the several novel features hereinafter fully set forth and claimed.

The invention is clearly illustrated in the drawing accompanying this specification in which—

Figure 1 is a plan, partly in section, illustrating a sectional warp beam embodying a simple form of the invention, and showing the same mounted upon fragments of the framework of a loom;

Fig. 2 is a vertical cross section through one of the warp spools taken on the line 2—2 of Fig. 1;

Fig. 3 is a vertical cross section taken on the line 3—3 of Fig. 1;

Fig. 4 is a vertical longitudinal section taken on the line 4—4 of Fig. 2;

Fig. 5 is a detail plan of the binder for the end of a series of warp threads; and

Fig. 6 is a detail cross section through said binding showing the same closed upon the warp ends.

Referring to said drawing, the reference character 8 designates a shaft rotatably

mounted in the side frame members 9 of the framework of a loom and having a crank 10 detachably secured to the shaft and furnishing the means by which it may be rotated. The shaft is usually provided with a ratchet wheel 11 which co-operates with a pawl 12 carried by the framework to hold the shaft and therewith the spools in any position of adjustment. The shaft is non-circular and is here shown as of hexagonal form, the purpose of which is to provide a non-rotatable connection between the shaft and the warp spools which are mounted thereon, as will be presently explained. The spools 13 are similar, and a description of one of them will suffice for all.

The spool is composed of two circular or disk-like side plates 14 desirably formed with marginal flanges 15 and connected together by a drum 16. The drum is composed of a strip of sheet metal rolled into cylindrical form and having laterally projecting tongues 17 that extend through slots 18 in the side walls 14 and are bent back against the outer faces thereof, thereby rigidly connecting the side walls to the drum. The side walls are formed with non-circular openings 19 corresponding in configuration to the non-circular shaft 8, and, in the present instance, being shown as hexagonal to correspond with the hexagonal shaft. With this arrangement the spools are non-rotatably mounted on the shaft and may be adjusted so as to bring all of the ends of the warp threads into alignment preparatory to threading the warp threads to the loom.

A great number of warp ends or threads 23 are wound upon each spool, as many as sixty threads being wound upon the spool at one and the same time. The extremities of the warp threads at each end thereof are fastened to a strip of paper 20 which is provided with an adhesive substance 21 on one face and is folded over the warp threads and secured thereto by the adhesive, as is seen in Fig. 6. The binding strip 20 provides simple means for attaching the inner ends of the warp threads to the drum of the spool. The two ends of the piece which forms the drum overlap, as seen at 24 in Fig. 3, and in winding the

spool the end portion of the binding strip 20 is inserted into the crevice between the overlapping portions, as is seen in Fig. 2, and then bent back over the end of the outer overlapping portion of the drum, and the series of warp threads then wound upon the spool in the direction of the arrow *a* in Fig. 2.

A suitable winding machine (not shown) is provided for winding the series of warp threads upon the spool, and said machine is designed to produce and even tension upon each individual warp thread as it is being wound upon the spool, and the side walls are firmly held against displacement by suitable collars applied to their outer sides. Moreover means are provided for exerting pressure against the turns of the warp threads as they are wound upon the spool, so that the threads are wound thereon evenly, tightly and under considerable pressure.

When a spool has been fully wound, a binding strip of twice the width of the binding strip 20 is fastened upon the parts of the warp threads that project beyond the spool, and the binding strip with the threads held therein is severed in two, thus leaving one portion of the binding strip upon the extremities of the warp threads which have been wound upon the spool and leaving another part upon the extremities of the warp threads that remain in the winding machine. A tongue 22 desirably composed of a strip of paper having an adhesive substance on one face is secured to the binding strip 20 which remains on the series of threads that have been wound on the spool and then is secured upon the adjacent parts of the warp threads, as seen at the left hand of Fig. 1, thereby fastening the free ends of the warp threads in place.

The spools with the extremities of the warp threads fastened down as above described are placed upon the shaft 8 with the binding strips disposed in alignment with each other, and to thread the loom, the tongue of one of the spools is detached from the threads, thus freeing the ends of the threads which, however, are held together by the binding strip 20. Each thread, beginning at one end of the binding strip, may be separately detached from the binding strip and threaded through the loom, tightened and tied to the cloth beam. By reason of the fact that the ends of the warp threads on each spool are secured together, as above described, there is no likelihood for the threads to become tangled while threading the loom and tying them to the cloth beam. Furthermore, inasmuch as the spools are held stationary by the pawl and ratchet mechanism, the operator may tighten the warp threads uniformly throughout the entire warp.

By reason of the fact that all of the spools are wound uniformly under an even tension

and pressure, the convolutions of the warp threads are wound evenly and uniformly, so that there is no likelihood that any slack will occur in any of the warp threads after having been tied to the warp beam, and, consequently, a more perfect article may be woven by the loom.

I claim as new, and desire to secure by Letters Patent:

1. In a warp beam, a filled warp spool having side walls and a drum extending between and secured to said side walls, said drum having overlapping end portions, a series of warp threads tightly and evenly wound on said drum and confined under tension between the side walls of the spool, and binding strips one adhesively secured to each end of the series of warp threads, and the binding strip at the inner end of the spool being secured between the overlapping portions of the drum and the binding strip at the outer end of the series of threads being adhesively secured to the adjacent layer of warp threads.

2. In a warp beam, a warp spool comprising side walls and a drum and having overlapping ends, a series of warp threads tightly and evenly wound thereon, and binding strips adhesively secured to both ends of the series of threads, the one binding strip having an interconnection with the overlapping ends of the drum of the spool and the other binding strip having a tongue projecting beyond the same and adhesively secured to the adjacent layer of warp threads.

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