

(No Model.)

2 Sheets—Sheet 1.

G. H. WILKINS.
SPOOL OF THREAD FOR SEWING MACHINES.

No. 405,726.

Patented June 25, 1889.

Fig-1-

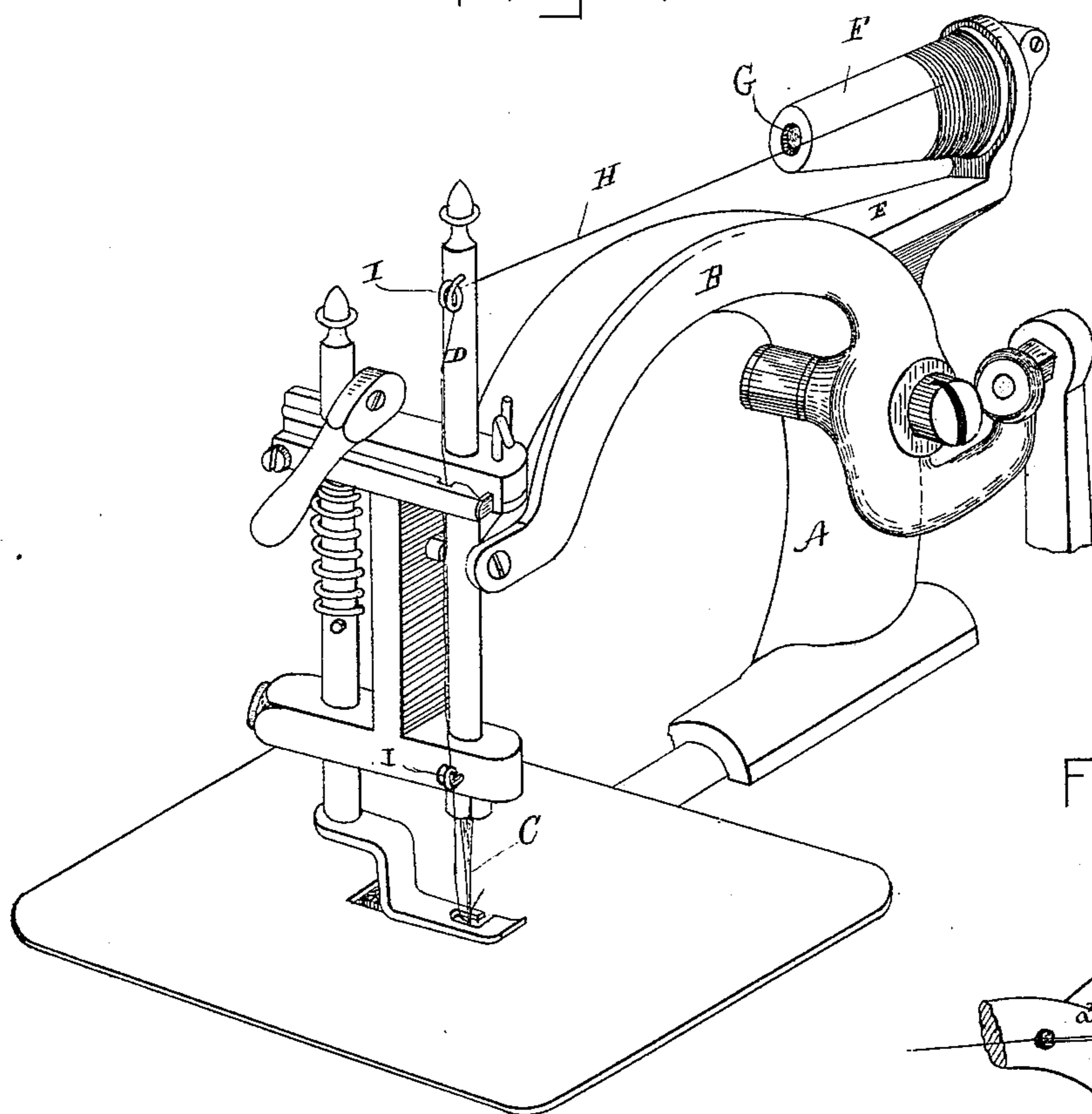


Fig-3-

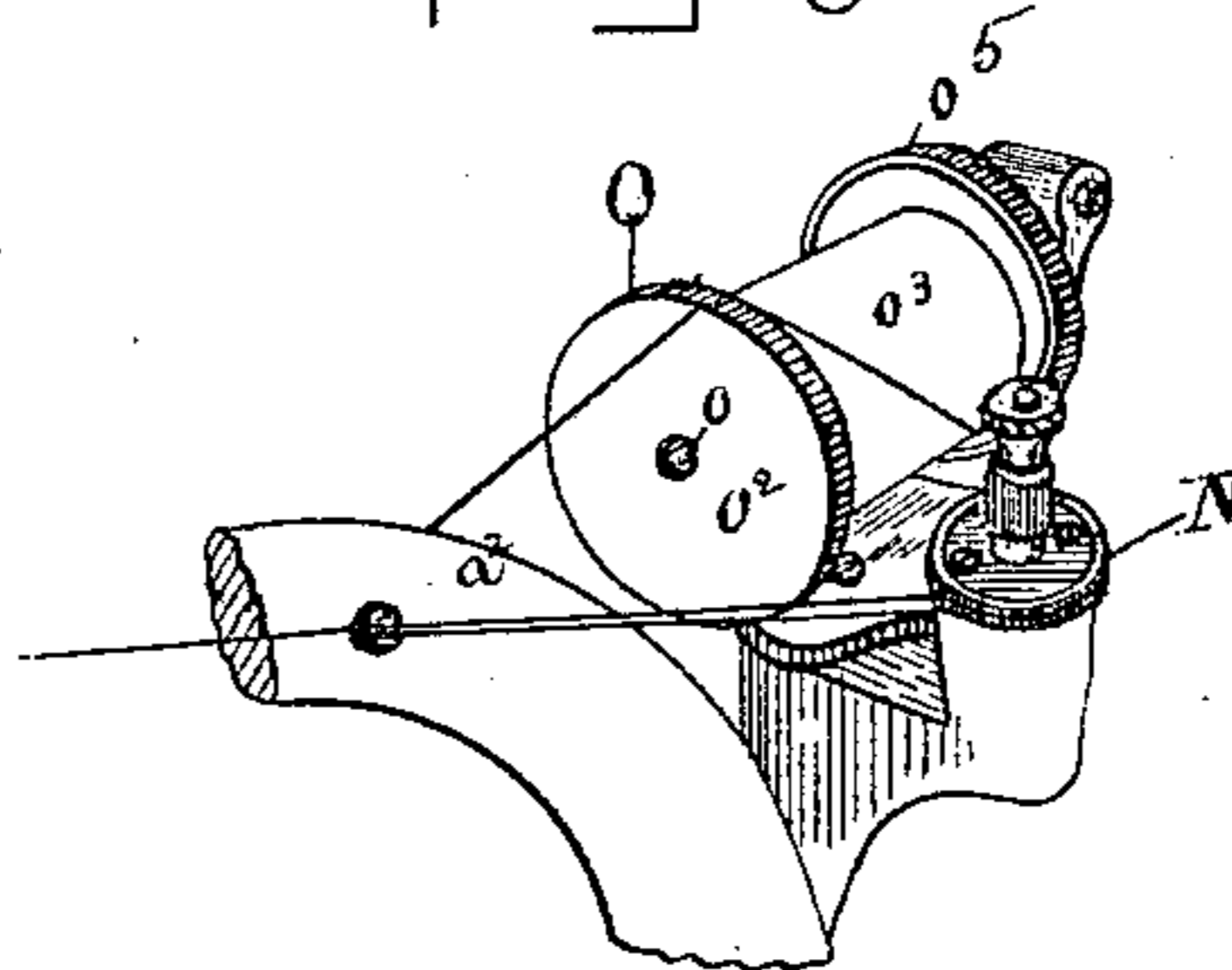
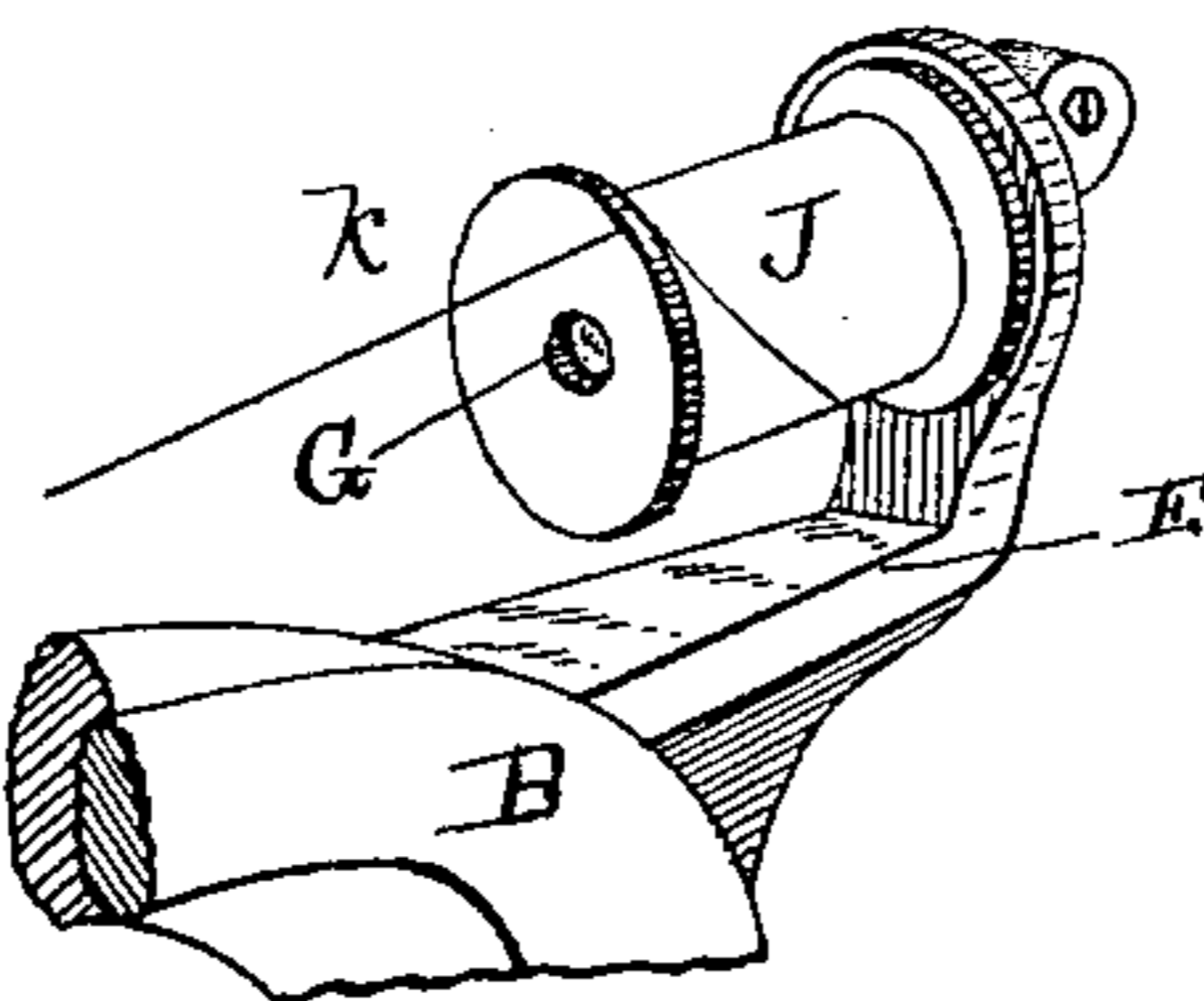


Fig-2-



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(No Model.)

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Fig-4-

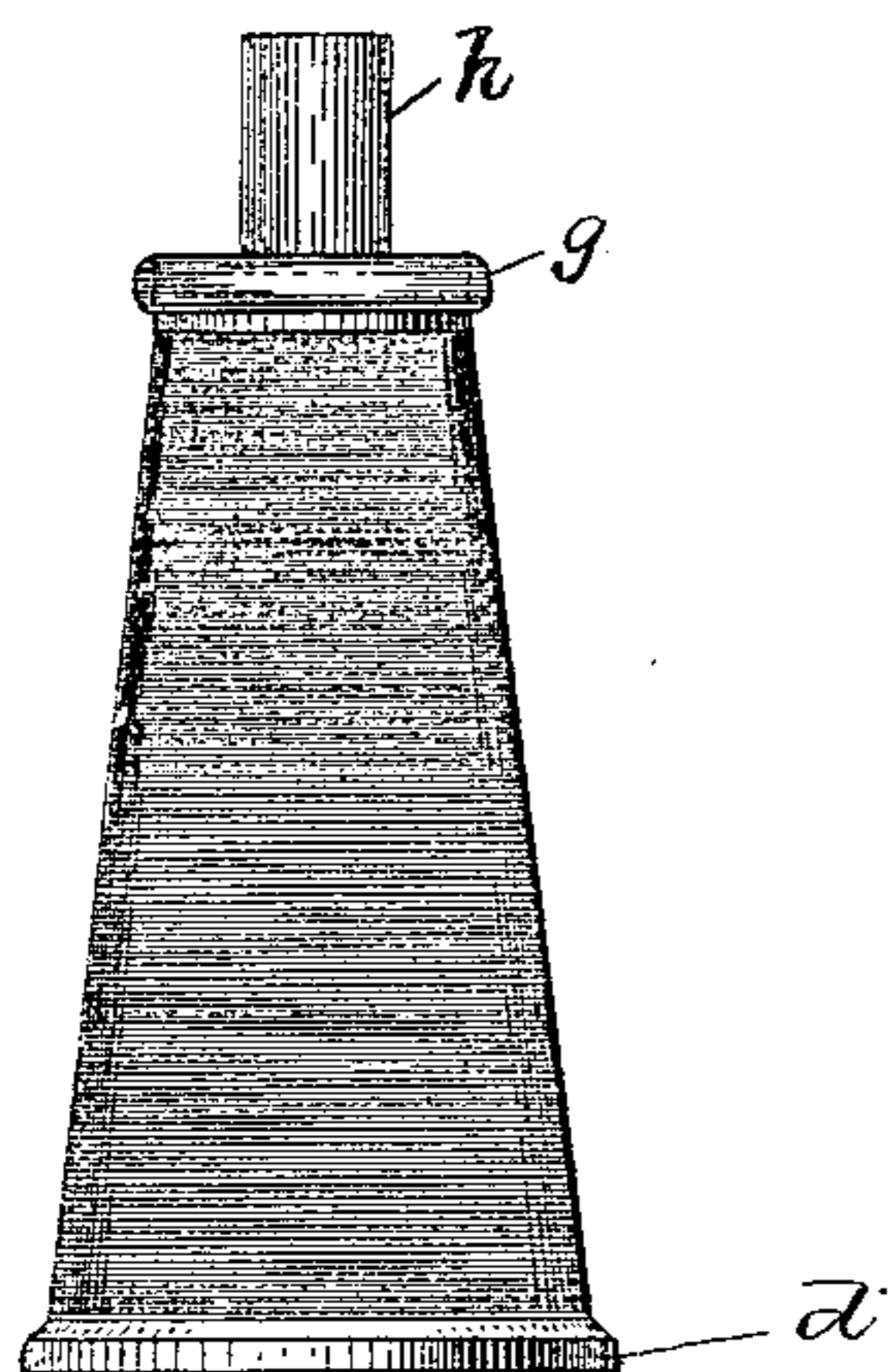


Fig-5-

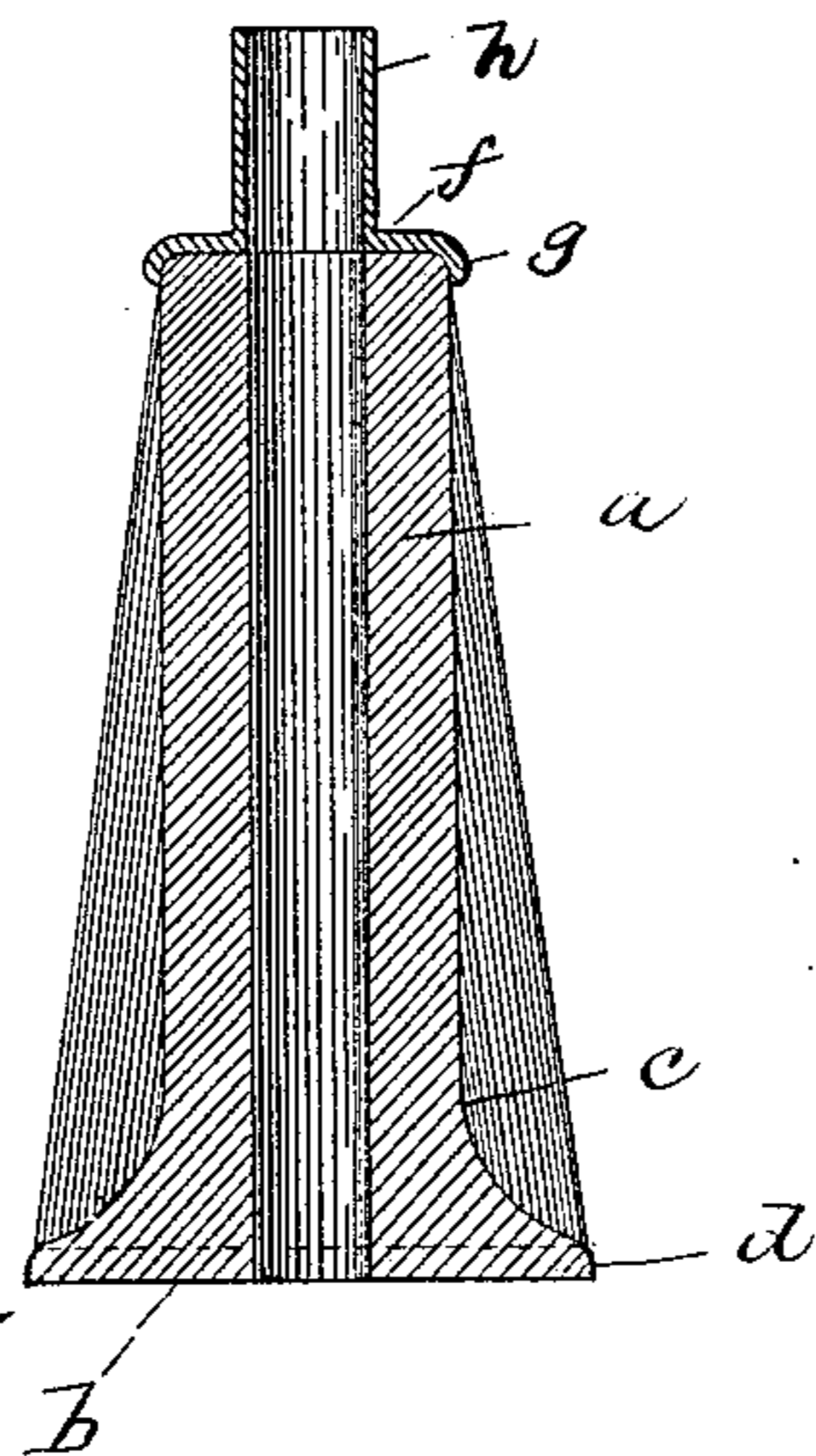


Fig-6-

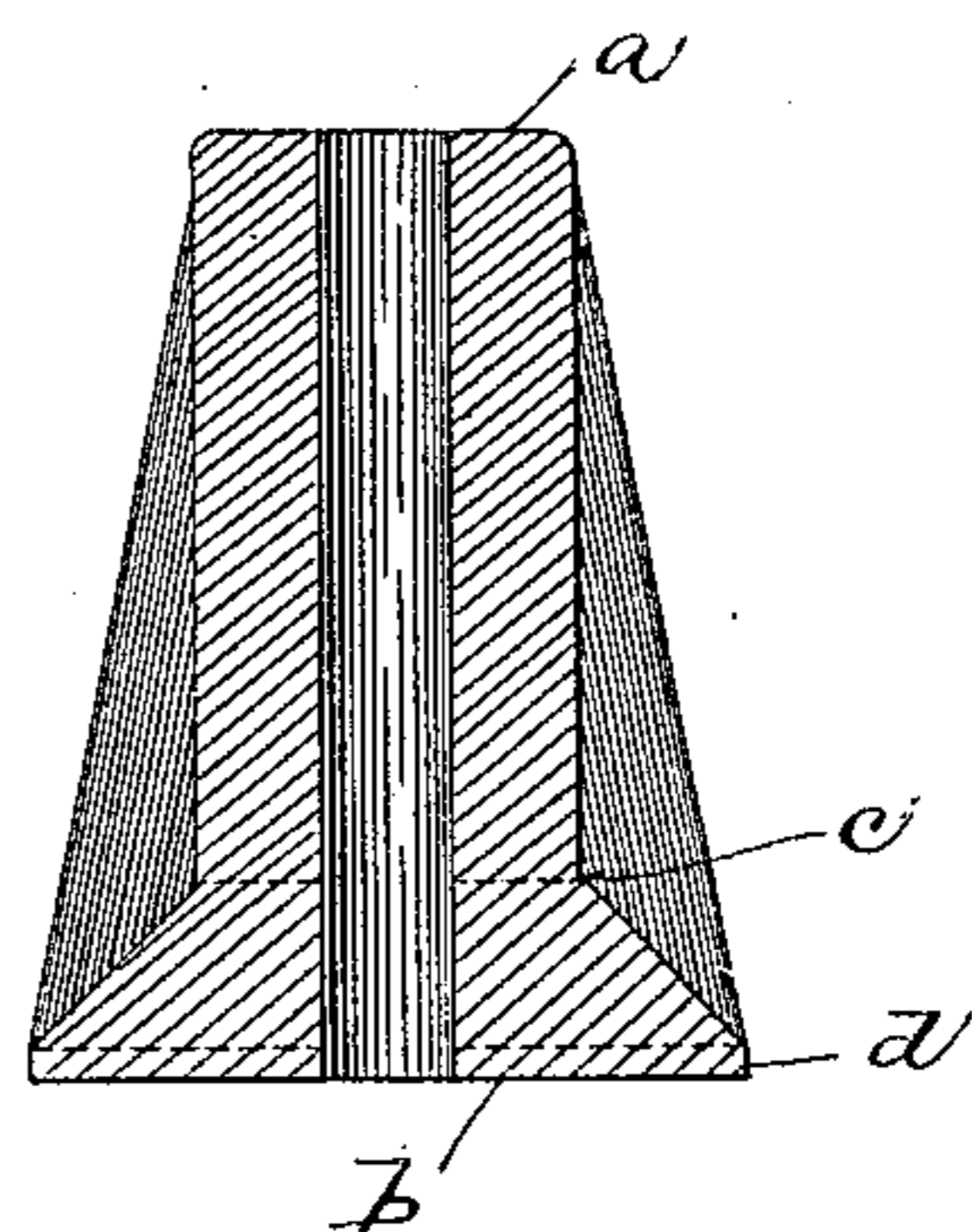


Fig-7-

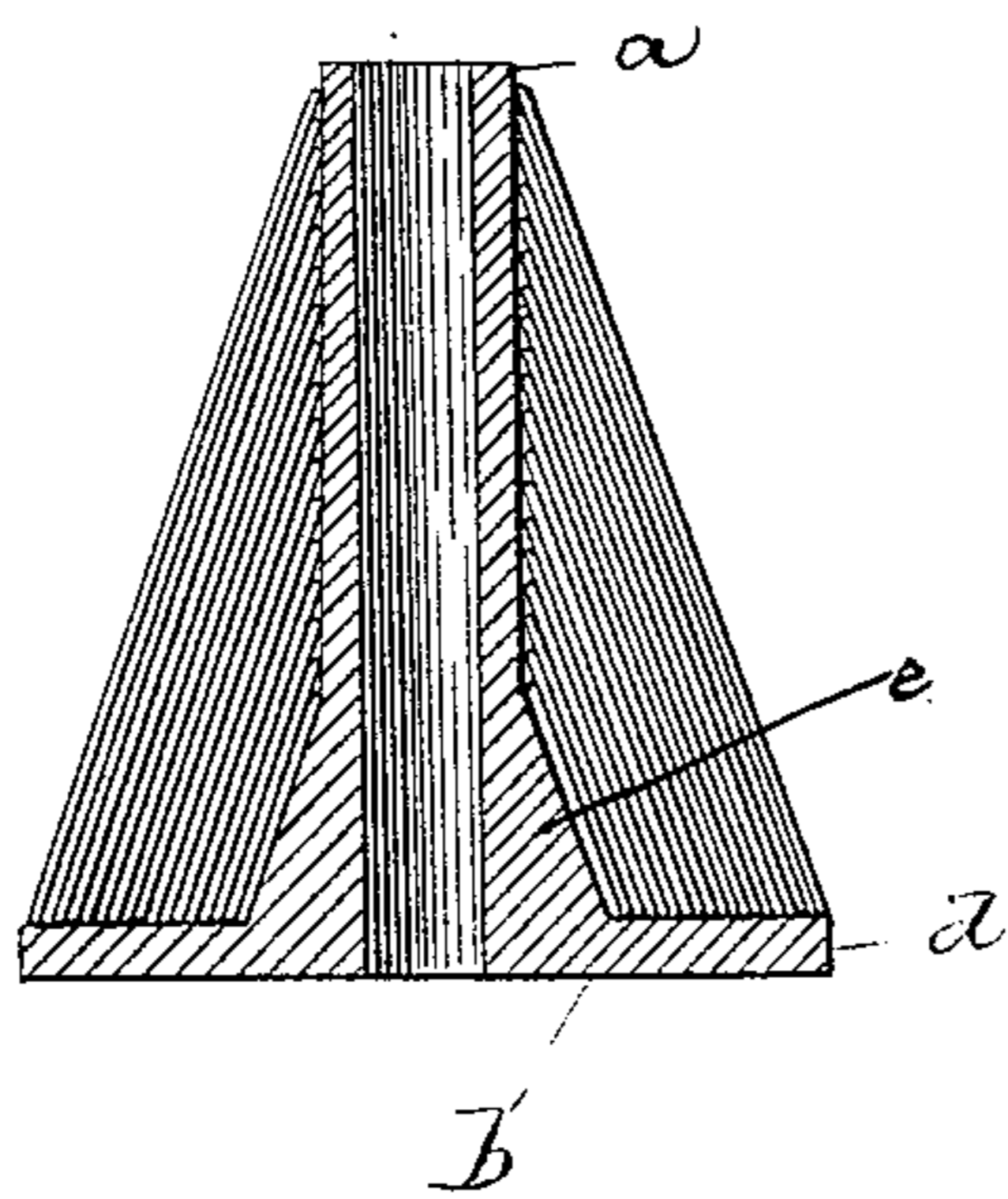
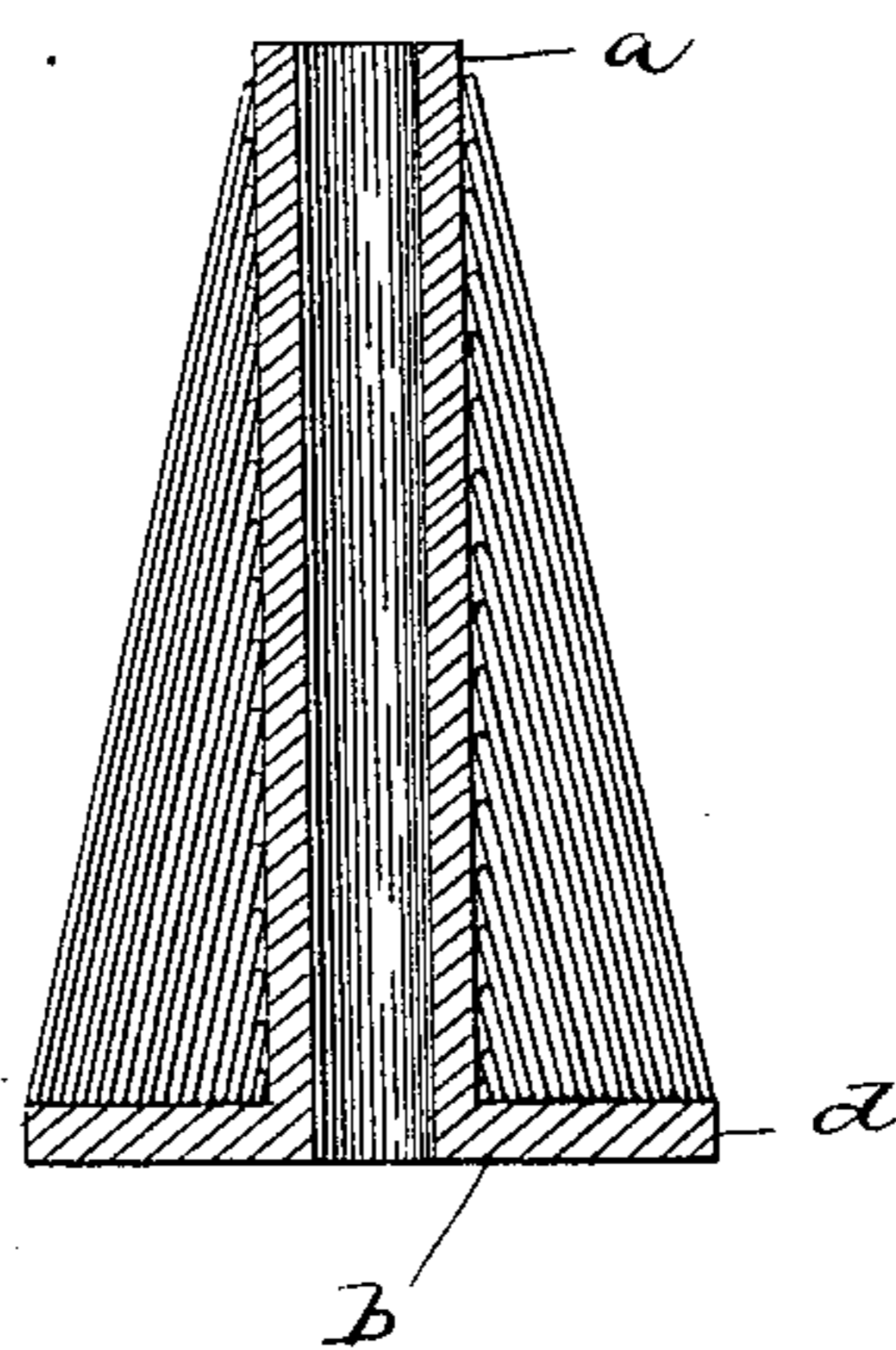


Fig-8-



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UNITED STATES PATENT OFFICE.

GEORGE H. WILKINS, OF SHELBURNE FALLS, MASSACHUSETTS.

SPOOL OF THREAD FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 405,726, dated June 25, 1889.

Application filed July 2, 1886. Serial No. 206,949. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. WILKINS, of Shelburne Falls, in the county of Franklin and State of Massachusetts, have invented certain new and useful Improvements in Spools of Thread for Sewing-Machines, of which the following is a specification.

In using large spools of thread or silk on power-driven sewing-machines it is essential that the thread or silk should be so wound on the spools that it will draw off easily therefrom, so that the tension will be uniform and there will thus be no danger of breakage; and the object of my invention is to provide conical spools of thread or silk which will meet this desideratum and which will be so wound that each layer of thread will be entirely covered by each succeeding outer layer, so that there will be but one layer exposed at a time, and changes in the colors by uneven exposure to light or dust of delicate shades of thread or silk will thus be avoided.

Of the drawings accompanying this specification and forming a part hereof, Figure 1 represents a perspective view of a portion of a sewing-machine with one of my improved spools of thread applied thereto. Figs. 2 and 3 represent parts of sewing-machines as at present organized and constructed, showing the objections which it is the design of my invention to overcome. Fig. 4 represents a side view of my improved spool of sewing-thread with the cap in position thereon. Fig. 5 represents a longitudinal vertical section thereof, showing the position on the spool of the several closely-wound layers of thread. Fig. 6 represents a sectional view similar to that shown in Fig. 5, the spool stem or body being shorter than and its base differing slightly in form from that portrayed in the last-mentioned figure. Fig. 7 represents a longitudinal section of another form of spool employed in carrying out my invention, and Fig. 8 represents still another form of spool which I prefer in some instances to employ.

Similar letters of reference indicate similar parts in all of the figures.

In the drawings, A represents the frame of a sewing-machine of a type commonly known as the "Willcox & Gibbs." B represents the needle-arm; C, the needle; D, the needle-bar;

E, the spool-stand; F, my improved spool; G, the spool-pin; H, the thread, and I I the thread-guides. The description thus far given is confined to Fig. 1, and shows the manner in which a sewing-machine is equipped in accordance with my invention, the thread H being drawn by the needle C from the spool F to the guide I on the needle-bar without the least obstruction which would be calculated to increase the tension thereon.

In Fig. 2 I have represented a spool-stand and spool J of ordinary construction, for the purpose of showing the objections which it is the design of my invention to overcome. As is well known, in some instances it is desirable to so arrange the spool with respect to the thread-guide eyes and needle that the thread will be drawn endwise from the spool, and when the latter is of the ordinary form, as shown in Fig. 2, and after a few courses of thread have been drawn off therefrom, the thread is necessarily drawn at an angle over the flange *k* of the spool, and, though the latter may be so arranged as to turn on the spool-pin G, circumstances frequently arise which prevent the spool from turning with freedom on the pin, which results in subjecting the thread to unusual tension, causing breakage of the thread, the dropping of stitches, and other imperfections in the work, as is well understood by those skilled in the art.

In Fig. 3 I have represented a portion of the machine shown and described in Letters Patent of the United States granted to C. H. Willcox, September 6, 1881, No. 246,700, showing contrivances having for their object the same ends as those to which my improvements are directed. In this view I have indicated the parts with the same letters and figures of reference as those employed in said patent, O indicating the spool-holder; *o*, the spool-pin; *o*², a disk adapted to revolve on the spool-pin; *o*³, the spool, of ordinary construction; *o*⁵, an additional cupped disk stationary on the spool-pin; *a*², a thread-guide eye formed in the needle-arm, and N an adjustable washer-tension. This construction was devised for the purpose of preventing the thread drawn from the spool *o*³ over disk *o*² through the guide-eye *a*² and tension N from binding on the edge of the disk and breaking, the disk *o*² being

constructed to revolve with freedom on pin *o*, for the purpose of avoiding the difficulty mentioned.

By my improvements I entirely avoid the difficulties experienced in the construction represented in Fig. 2 and obviate the necessity for the special devices shown in Fig. 3, and this I do by the peculiar construction of a spool of thread, as I will now proceed to describe, which spool I adapt to the machine, as already indicated.

Referring to Sheet 2 of the drawings, *a* represents the spool stem or body, and *b* the base or flange on one end thereof. As represented in Fig. 5, the sides of the stem or body of the spool, as I prefer in most instances to construct it, are made parallel when viewed in cross-section from the top to the junction of the stem with the base, which may be supposed to be the point represented by the letter *c*, from which point the base curves or flares outward to its periphery *d*.

In carrying out my invention on spools having the form represented in Figs. 4 and 5 I wind the thread thereon by commencing at or near the point *c*, and wind two, three, or more coils laid closely or compactly together. I then wind or spool upon this foundation course two additional courses of greater length, laying the coils closely or compactly together, as before, and extending the second and third courses several coils above the foundation course, but only one or two coils below it. I proceed in the same manner to wind successive pairs of courses upon the spool until the same is filled, when it will have a form substantially that of the frustum of a cone, which was the prime object in spooling the thread on the stem or body in the manner specified. In the example just explained the last layer of thread on the spool will consist of a series of closely-wound coils extending substantially from the periphery of the base to the top of the stem.

In Fig. 6 I have shown a spool with a shorter stem or body than in Figs. 4 and 5, and in this instance the base of the spool is inclined from the point of its junction with the stem or body, as represented at *c*, to its periphery. In this construction the filling of the spool may be begun at the point *c*, as in the instance already described, though each two successive layers may not extend so far toward the point or top of the spool beyond the preceding two layers as in the constructions represented in Figs. 4 and 5.

In Fig. 7 I have shown a form of spool in which the stem or body is gradually enlarged near its junction with the base, as indicated by the letter *e*, and the sides of the base are formed at right angles to the sides of the main portion of the stem or body *a*. In carrying out my invention on a spool of this form the winding of the thread may be begun on the enlarged portion *e* of the stem and be carried on substantially as described with reference to the forms of spool shown in Figs.

4, 5, and 6, excepting that each two layers or courses will extend to the base and with varying extent toward the top or point of the spool.

In Fig. 8 I have shown still another form of spool. In this example the sides of the stem or body when viewed in cross-section are parallel throughout, and the sides of the base are formed at right angles thereto. Each two courses or layers of thread extend to the base of the spool, but with varying distances toward the top.

In all of these different ways of building up the thread on the spools or cops it will be observed that conical cops from which the thread will run easily are produced, while at the same time the thread is so wound that from the centers of the cops or spools outward each successive course or layer (or pair of courses or layers, as the case may be) is longer than the preceding course or layer, and thus fully covers the same, so that whatever part of the thread may be unwound from the spool not more than one entire layer will be exposed to light or dust at one time, and the objection arising from having any part of a course exposed for a long time before being used will be avoided.

A spool of thread thus constructed is designed to be used upon what is commonly known as the "Willcox & Gibbs" sewing-machine, as represented in Fig. 1 of the drawings, and upon the "Reese" button-hole machine, and similar types of machines where the thread is drawn from the end of the spool. There being no flange on the end of my spool from which the thread is drawn, no necessity exists for providing this end with a rotating disk to obviate the undue tension put upon the thread when it is drawn over the disk from coils laid near thereto, as represented in Fig. 3. I prefer to provide the upper end or tip of the spool with a disk *f*, having a beaded rim *g* extending over the sides of the spool at said end, as shown in Figs. 4 and 5. Disk *f* is also provided with a hollow stem or sleeve *h*, adapted to fit over the spool-pin, which construction is calculated to assist in holding the spool on the pin and avoid all chafing or abrasion of the thread on the end of the spool as it is drawn therefrom. The disk *f* may, however, be omitted and the spool applied to the spool-pin, as represented in Fig. 1.

The Reese button-hole machine has been specially mentioned for the reason that great difficulty of the character mentioned has been experienced in this machine, causing the dropping of stitches, which difficulty is entirely overcome by my improvements.

I am aware that conical bobbins or cops of yarn and thread are not new, and I do not therefore wish to be understood as claiming the same, broadly.

What I claim is—

1. A conical spool of thread or silk the courses or layers of which increase successively in length from the inner portion thereof outward throughout the entire body of thread,

whereby each course or layer is entirely covered by each succeeding outer course or layer, substantially as and for the purpose set forth.

2. A conically-wound spool of thread consisting of a spool proper having a stem or body and a flanged base and of thread or silk in substantially close coils on the spool-body, the courses or layers of thread or silk increasing successively in length from the inner portion of the spool outward throughout the entire body of thread, substantially as and for the purpose set forth.

3. The spool consisting of the stem *a*, the flanged base *b*, the thread in close coils on the spool, the first or foundation course consisting of a few coils on the spool at the junction

of the stem *a* with the base *b*, and each succeeding course extending a short distance beyond the preceding course toward the base and a greater distance beyond each preceding course toward the tip or end, whereby a spool of thread having substantially the form of a frustum of a cone is formed, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of June, 1886.

GEORGE H. WILKINS.

Witnesses:

ARTHUR W. CROSSLEY,
C. F. BROWN.