

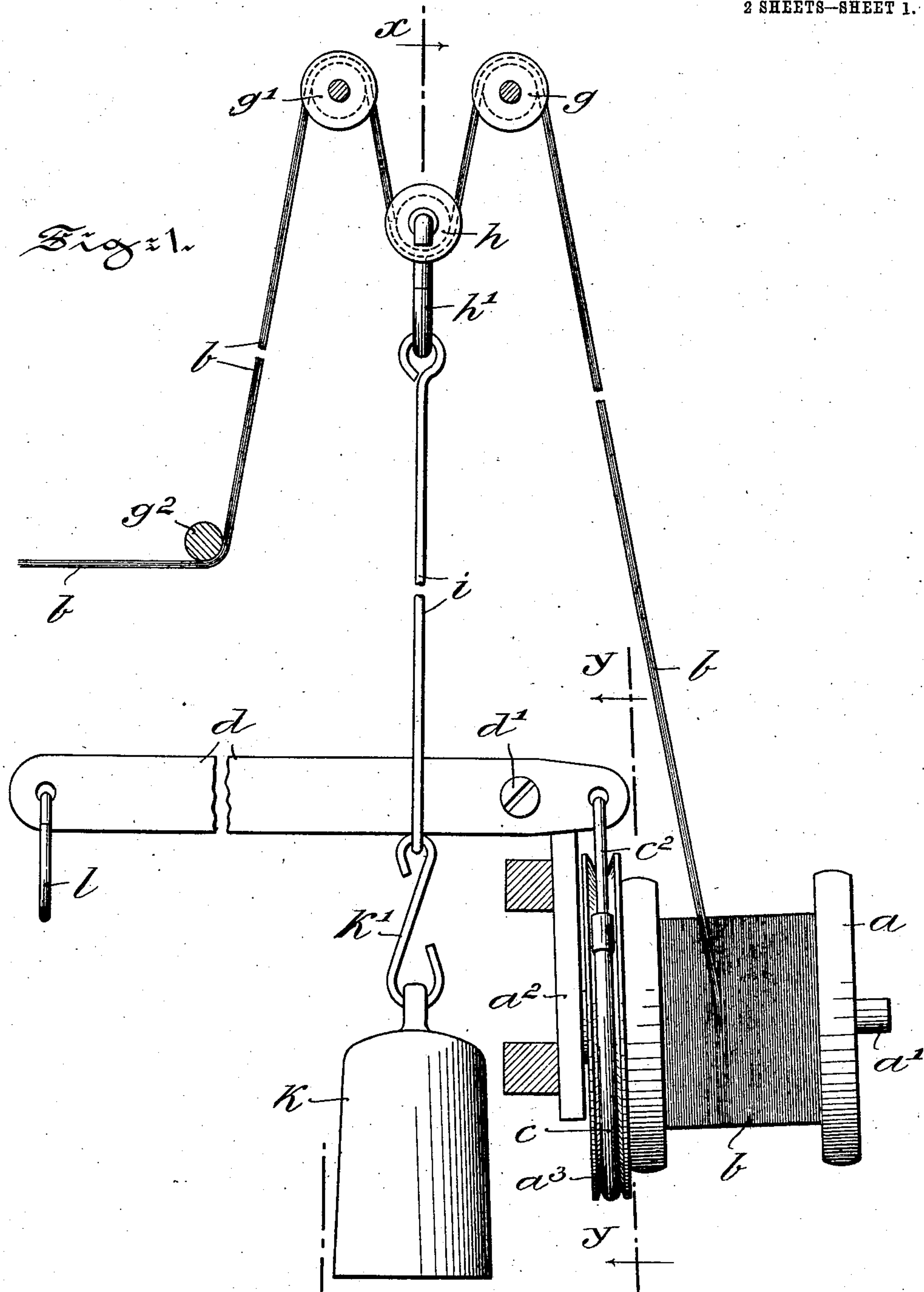
No. 844,523.

PATENTED FEB. 19, 1907.

E. KEUSER.  
AUTOMATIC TENSION DEVICE FOR LOOMS.

APPLICATION FILED DEC. 18, 1905.

2 SHEETS—SHEET 1.



Witnesses:  
Wilhelm Vogt  
Thomas M. Smith

Inventor:  
Emanuel Keuser,  
By J. Walter Douglas  
Attorneys

No. 844,523.

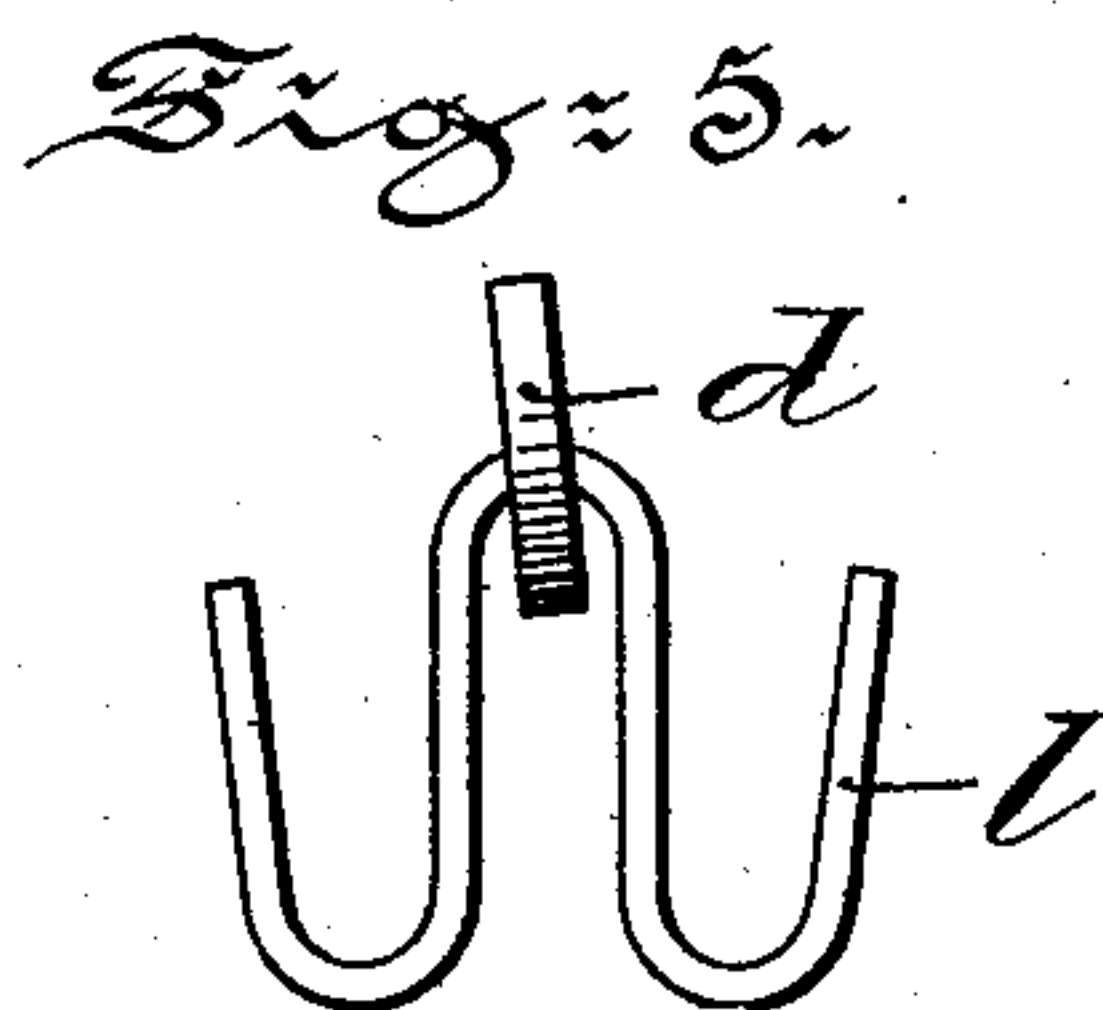
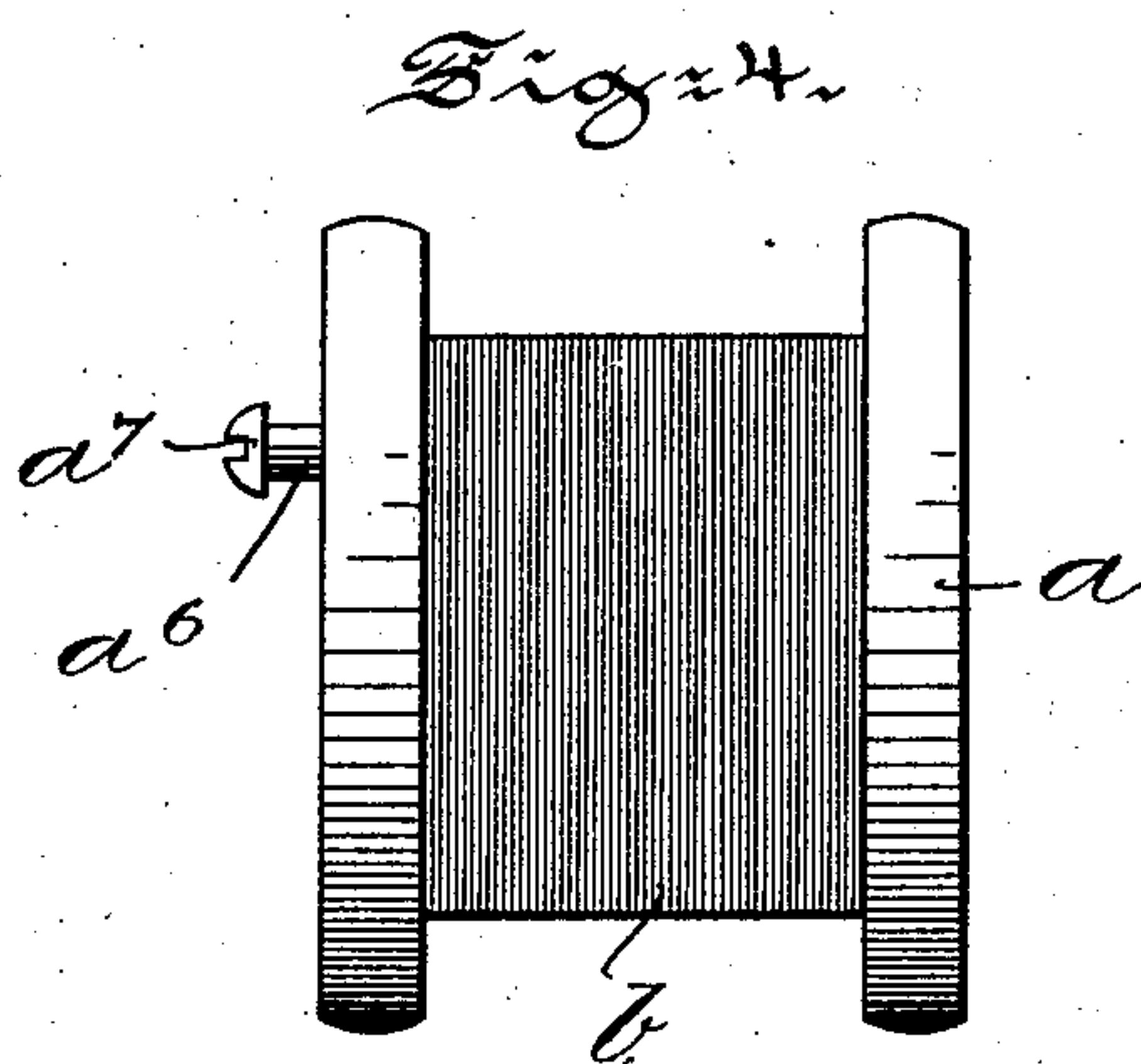
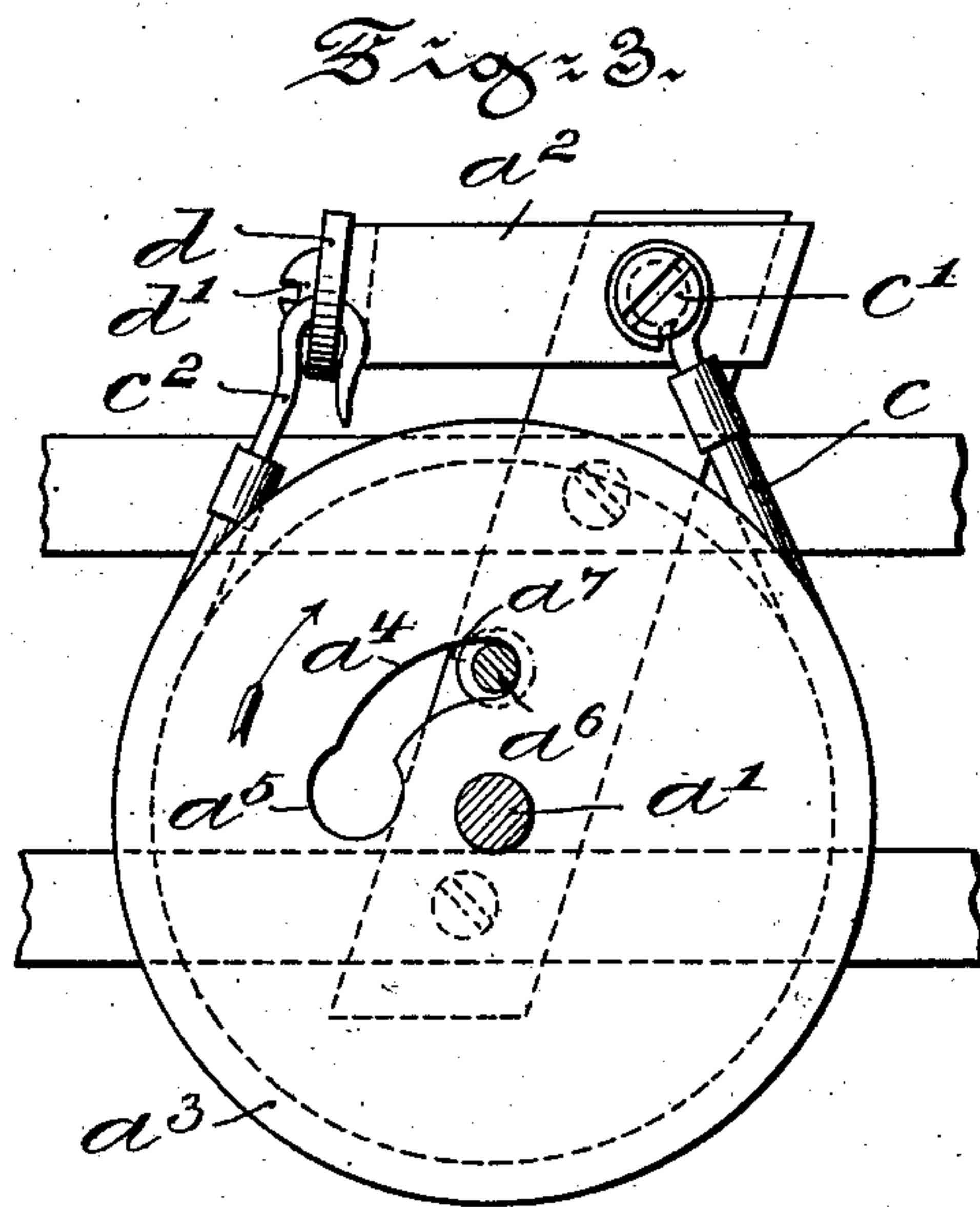
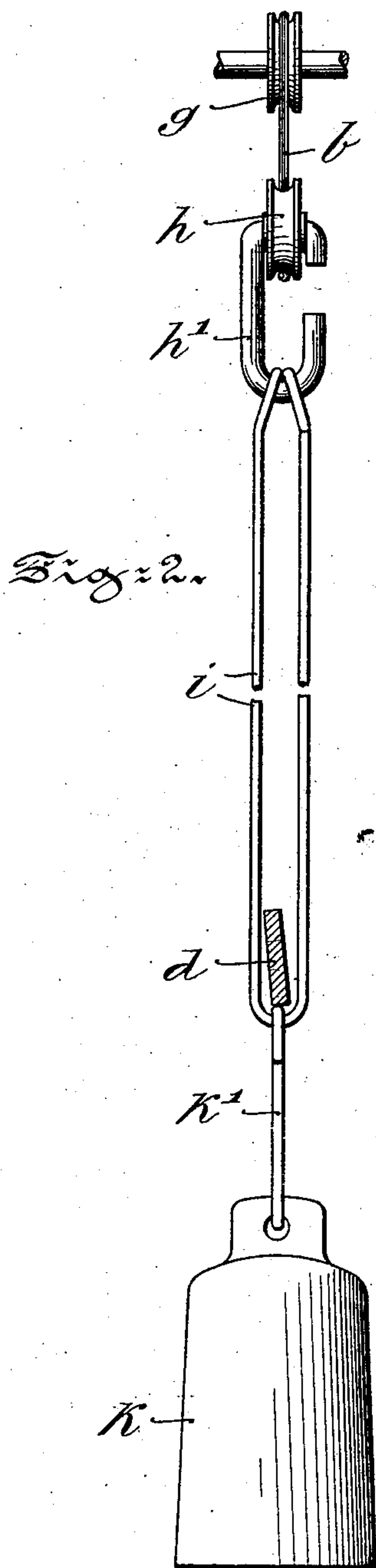
PATENTED FEB. 19, 1907.

E. KEUSER.

AUTOMATIC TENSION DEVICE FOR LOOMS.

APPLICATION FILED DEC. 18, 1905.

2 SHEETS—SHEET 2.



Witnesses:  
 Wilhelm Vogt  
 Thomas M. Smith

Inventor:  
 Emanuel Keuser,  
 By J. Walter Douglas  
 Attorney



# UNITED STATES PATENT OFFICE.

EMANUEL KEUSER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF  
ONE-HALF TO JACOB HOTZ, OF PHILADELPHIA, PENNSYLVANIA.

## AUTOMATIC TENSION DEVICE FOR LOOMS.

No. 844,523.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed December 18, 1905. Serial No. 292,143.

*To all whom it may concern:*

Be it known that I, EMANUEL KEUSER, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Tension Devices for Looms, of which the following is a specification.

My invention relates to that class of tension devices employed in looms in which the threads or filamentous material is fed automatically from a spool under a uniformly-maintained tension to a beam or other appliance; and in such connection it relates particularly to the construction and arrangement of such a tension device for the said purpose.

The principal objects of my invention are, first, to provide a spool adapted to contain thread with a detachable brake mechanism to normally retard rotation of the spool, and thus to hold the thread thereof under a defined or certain tension; second, to provide a tension mechanism for thread which when tension imparted thereto by a beam exceeds that imparted to the thread by a weight permits of the loosening of the brake mechanism, and thus permits of the free rotation of the spool accompanied by unrestricted unwinding of thread therefrom; third, to so arrange the tension mechanism as to permit of the taking up of slack in the thread and actuation of the brake device simultaneously to thereby lock the spool so as to prevent further rotation thereof, and hence unwinding of thread therefrom, and, fourth, to so arrange the tension and brake mechanism as that in the event of breaking of the thread the spool can be instantly locked by the brake mechanism, which then supports and limits the downward movement of the tension mechanism, so as to prevent disarrangement of threads in the loom.

My invention, stated in general terms, consists of an automatic feeding device and tension mechanism for controlling from a spool the unwinding of thread under a maintained uniform tension.

The nature and scope of my present invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a view illustrating, partly in front elevation and partly in section, the tension device and brake mechanism associated therewith embodying main features of my said invention. Fig. 2 is a view, partly in elevation and partly in broken section, on the line  $xx$  of Fig. 1. Fig. 3 is a rear end elevational view of a pulley of the spool on the line  $yy$  of Fig. 1. Fig. 4 is a side elevational view of the spool with coupling means projecting therefrom detached from a brake mechanism controlling the rotation thereof, and Fig. 5 is an end elevational view of a lever-arm and a hook-like means forming a portion of the brake mechanism.

Referring to the drawings,  $a$  represents a spool loosely mounted on a spindle  $a'$ , secured to a standard  $a^2$ . Between the spool  $a$  and standard  $a^2$  and loosely mounted on the spindle  $a'$  is arranged a spool controlling or brake mechanism, preferably consisting of a sheaf wheel or pulley  $a^3$ , partially surrounded by a strap or band  $c$ .

The preferred means for detachably connecting the spool  $a$  with the sheaf wheel or pulley  $a^3$  consists of a headed bolt  $a^6$ , engaging a curved slot  $a^4$  of the wheel  $a^3$  by passing with its head  $a^7$  through the enlargement  $a^5$  of the slot  $a^4$  of the sheaf-wheel  $a^3$ . Upon the spool  $a$  are wound one or more threads of filamentous material  $b$ , which pass from the spool over fixed guide-rollers  $g$  and  $g'$  and under a beam  $g^2$ , from which such material is conducted to a beam, (not shown,) which by drawing the threads  $b$  forward unwind the same from the spool  $a$ , and thus rotates the spool and sheaf wheel or pulley  $a^3$ , coupled to the spool  $a$ . The free rotation of the spool  $a$  is, however, checked by the sheaf-wheel  $a^3$  and band  $c$  by the following preferred mechanism: As shown in Fig. 3, the strap or cord  $c$  is at one end connected with the standard  $a^2$  by a bolt  $c'$ , and at the other end by means of a hook  $c^2$  it detachably engages a cross lever-arm  $d$ , pivotally secured in the point  $d'$  of the standard  $a^2$ . The fulcral point  $d'$  of the lever  $d$  being arranged adjacent to the standard  $c$  permits the same to act as a weight to normally hold the band  $c$  in engagement with the sheaf-wheel  $a^3$ , the rotation of which wheel  $a^3$  and spool  $a$  is thus normally retarded to a slight degree to hold the thread  $b$  under a certain or defined tension. Outside the tension exerted on the thread  $b$  by the le-



ver  $d$  the same is subjected to a direct tension by the following preferred mechanism.

As shown in Fig. 1, between the fixed guide-rollers  $g$  and  $g'$  the thread  $b$  is engaged  
 5 by a roller or sheaf-wheel  $h$ , which by means of a hook  $h'$  is connected with a loop  $i$  surrounding the lever  $d$ . To the loop  $i$ , by means of a hook  $k'$ , is detachably secured a weight  $k$ , serving to hold the thread  $b$  under  
 10 a uniform tension, which tension depresses the thread  $b$  between the rollers  $g$  and  $g'$  and permits the loop  $i$  to descend sufficiently to permit of the free actuation of the lever  $d$  in the loop  $i$ . If, however, slack occurs in the  
 15 thread  $b$ , the same will permit the loop  $i$  to engage the lever  $d$ , which under the influence of the weight  $k$  brings the band  $c$  with sufficient force into engagement with the sheaf-wheel  $a^3$  to instantly stop rotation of the  
 20 same, as well as the spool  $a$ . Thus the slack is automatically taken up and the further unwinding of the thread  $b$  from the spool  $a$  prevented. The stopping of rotation of the spool  $a$  by the lever  $d$  also takes place when  
 25 the thread  $b$  breaks. In this instance, however, the weight  $k$ , by means of the loop  $i$ , will now be supported by the lever  $d$  only, which thus limits the downward movement of the weight  $k$  and prevents disarrangement  
 30 of threads in the loom by the weight. The loop  $i$ , by depressing the lever  $d$  and by being unsupported by the thread  $b$ , slides downward on the lever  $d$  until its free end is reached. At this point the movement of the  
 35 loop  $i$  is arrested, preferably by a stop  $l$ , which prevents the disengagement of the loop  $i$  from the lever  $d$ . The sheaf-wheel  $a^3$  being locked in its position by the lever  $d$ , when a thread breaks or when no spool is con-  
 40 nected therewith permits of the ready disconnection of the spool  $a$  by turning the same slightly in a direction opposite to that

indicated by the arrow in Fig. 3. The head  $a^7$  of the bolt  $a^6$ , forming the coupling means, will thus be brought opposite the enlargement 45  $a^5$  of the slot  $a^4$ , through which the same can then be readily withdrawn. At the same time the locked position of the sheaf-wheel  $a^3$  permits of the ready reconnection of the spool or another therewith. 50

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

In an automatic tension device, a spool for containing thread, a support carrying a shaft 55 upon which said spool is mounted, a sheaf-wheel mounted on said shaft, removably connected with said spool and rotated by the same, a lever pivotally secured to said support, a band passing over said sheaf-wheel 60 and respectively connected with said support and lever, said lever and band adapted normally to retard the rotation of said wheel and by the same said spool, fixed rollers for supporting and guiding the thread, a roller 65 supported by the thread, a loop carried by said supported roller and passing around said lever, a weight secured to said loop, said weight, loop and roller adapted normally to hold the thread under tension and when the 70 same breaks to permit said loop to depress said lever and by said band to stop rotation of said wheel and spool, and a stop secured to said lever and adapted when the loop slides downward upon the same to arrest further 75 movement of said loop upon reaching the free end of said lever.

In witness whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EMANUEL KEUSER.

Witnesses:

J. WALTER DOUGLASS,  
 THOMAS M. SMITH.