

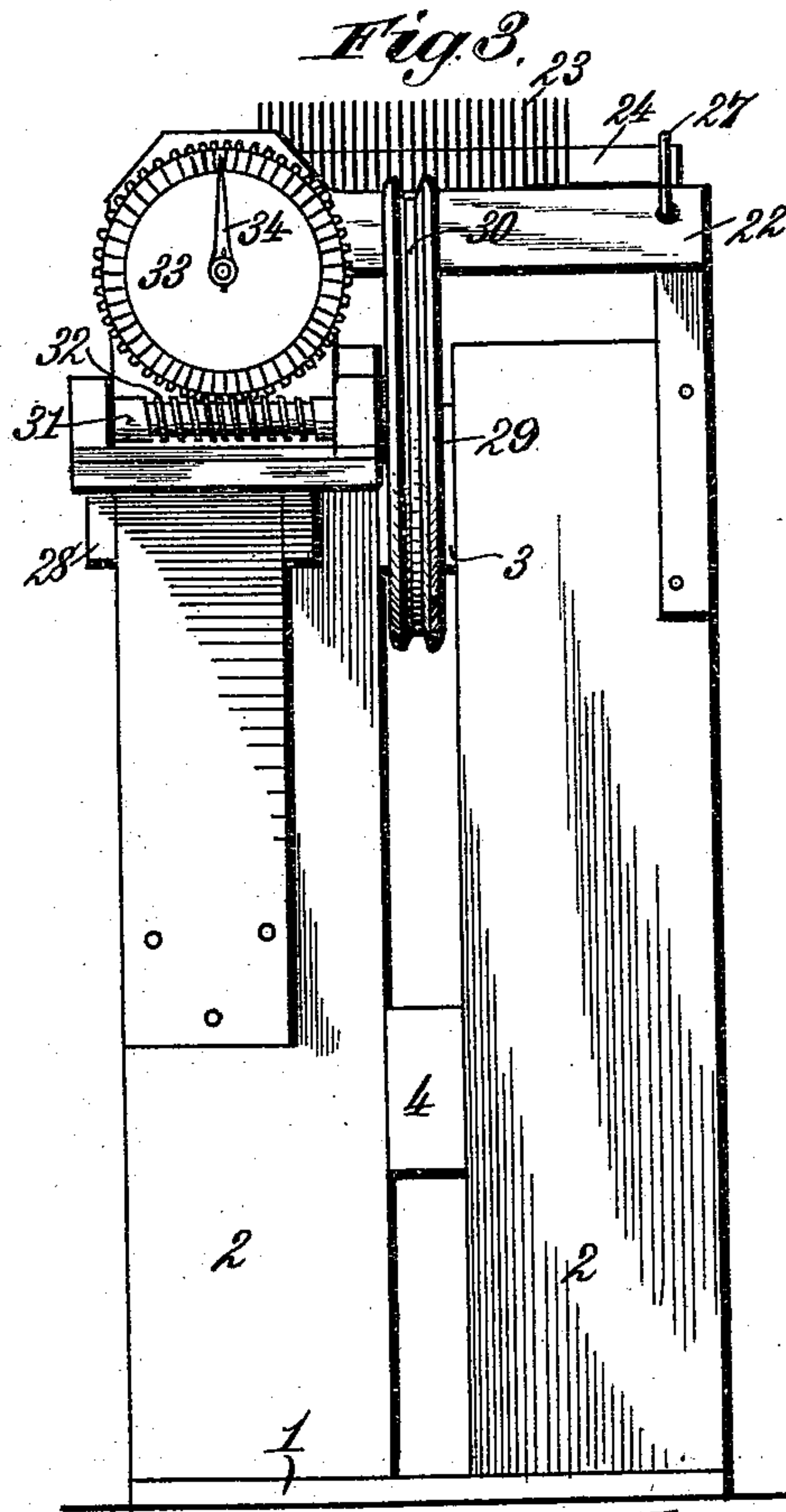
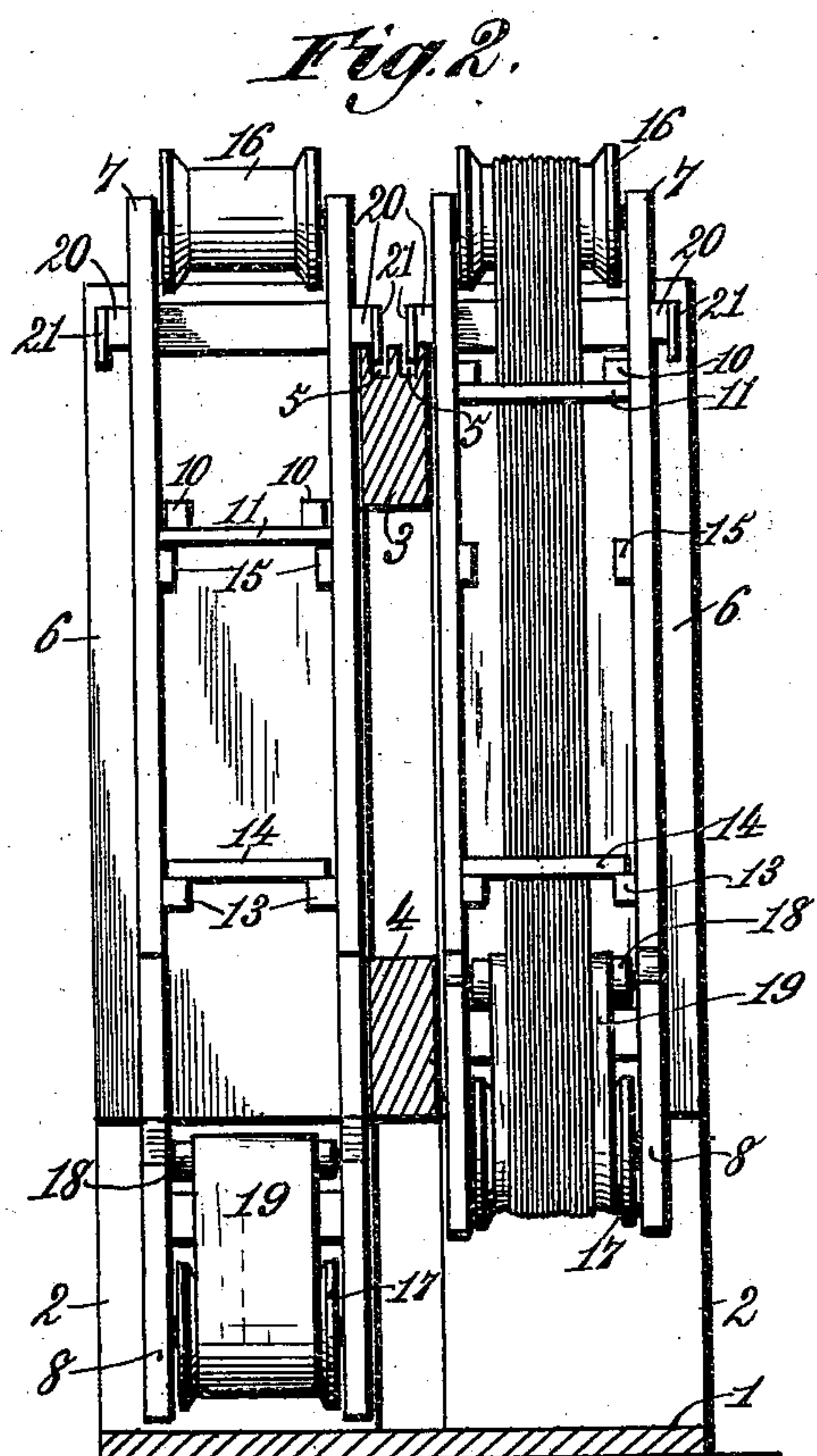
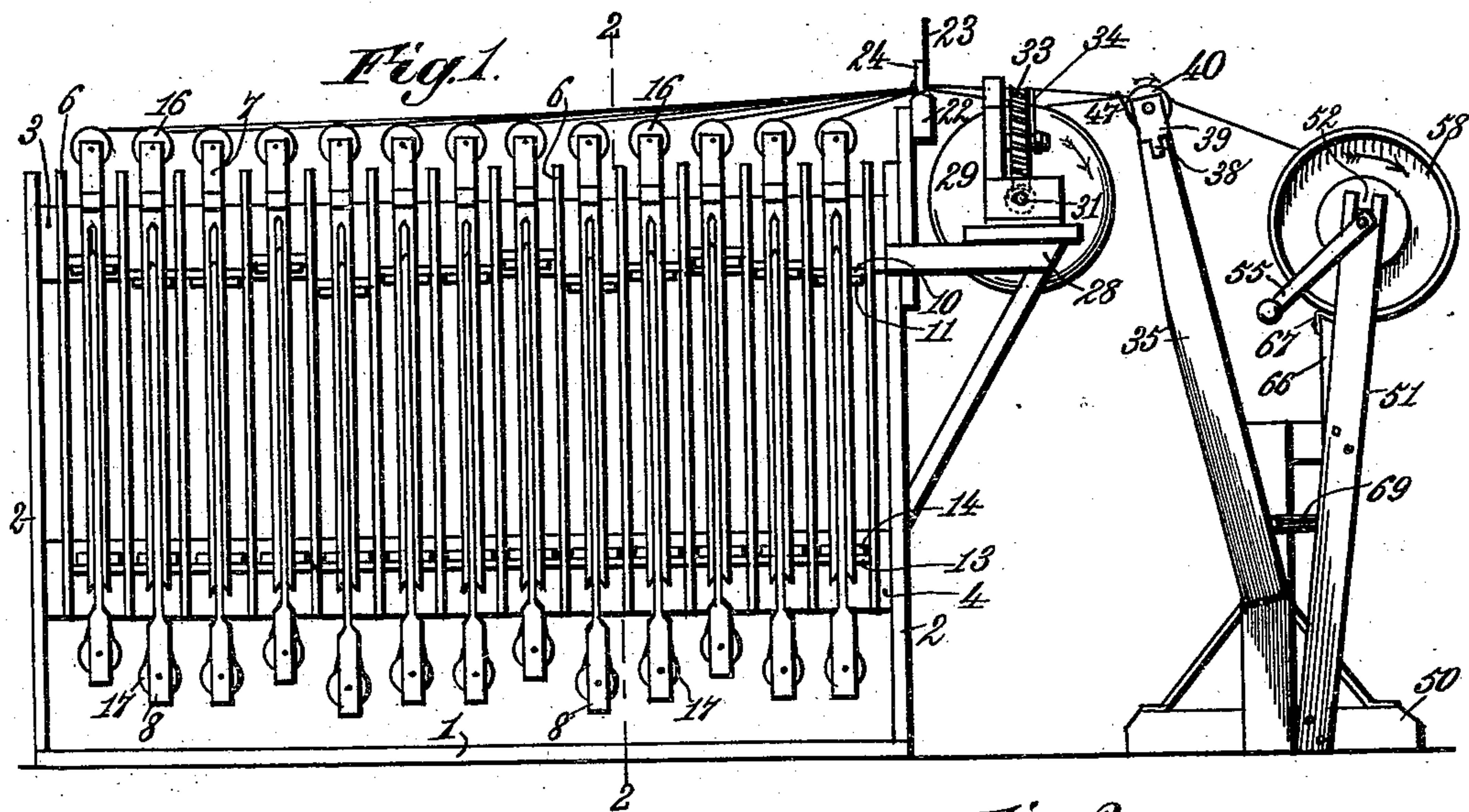
(No Model.)

3 Sheets—Sheet 1.

J. U. BAKER.
WARP BEAMING MACHINE.

No. 556,172.

Patented Mar. 10, 1896.



Witnesses
M. H. Jones.
R. H. Jones.

Inventor:
Jonathan U. Baker
By Percy B. Hills
att'y

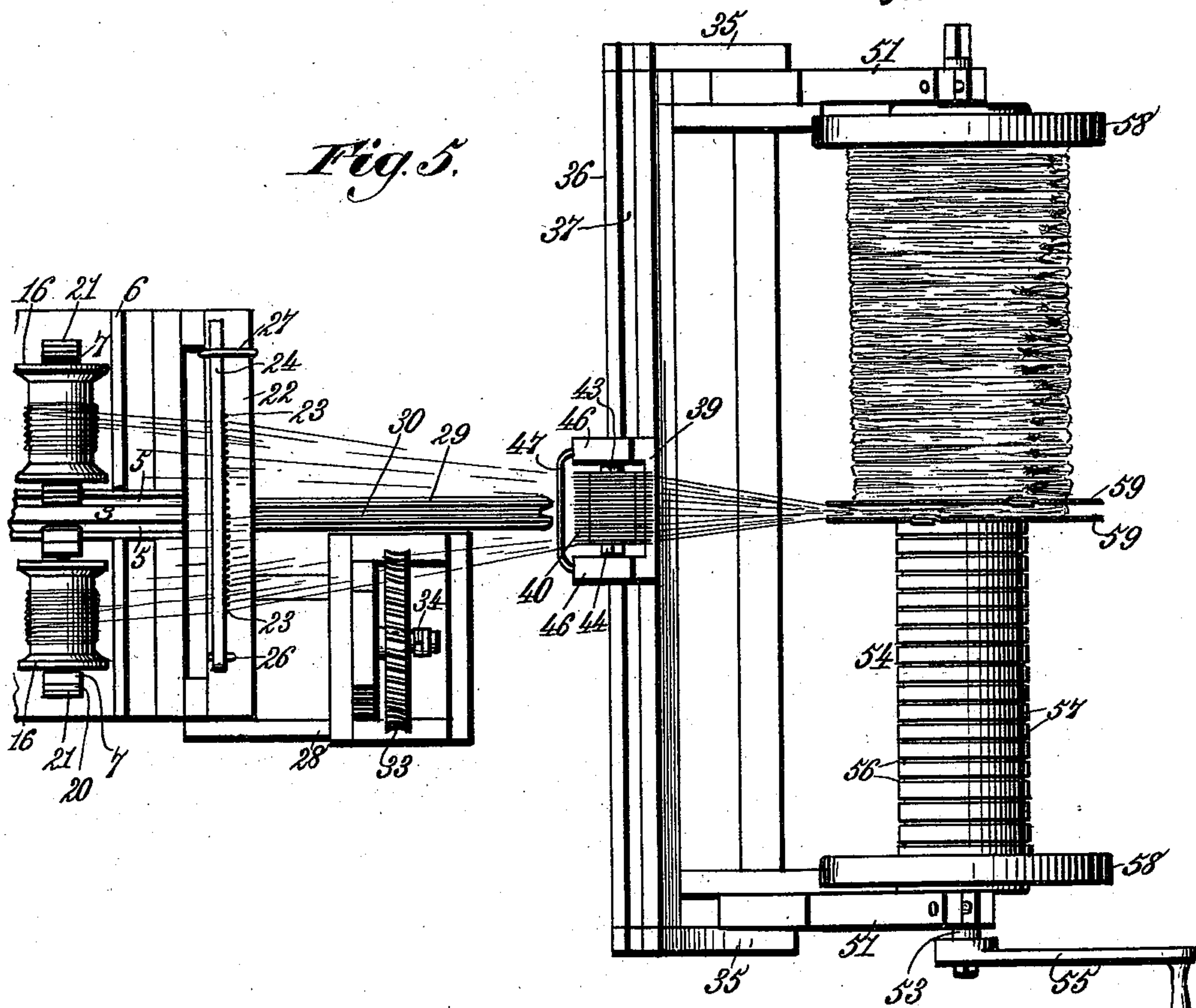
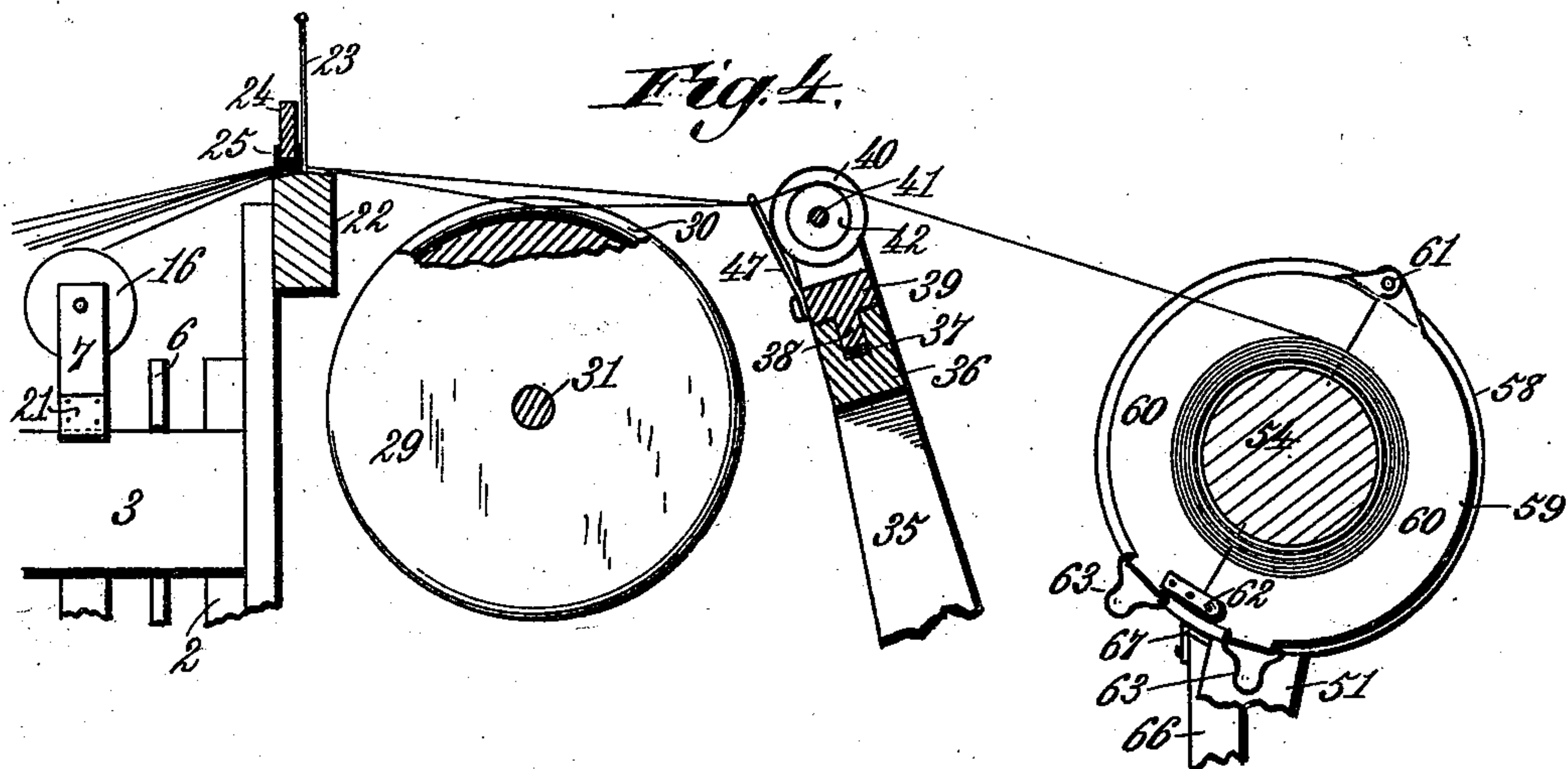
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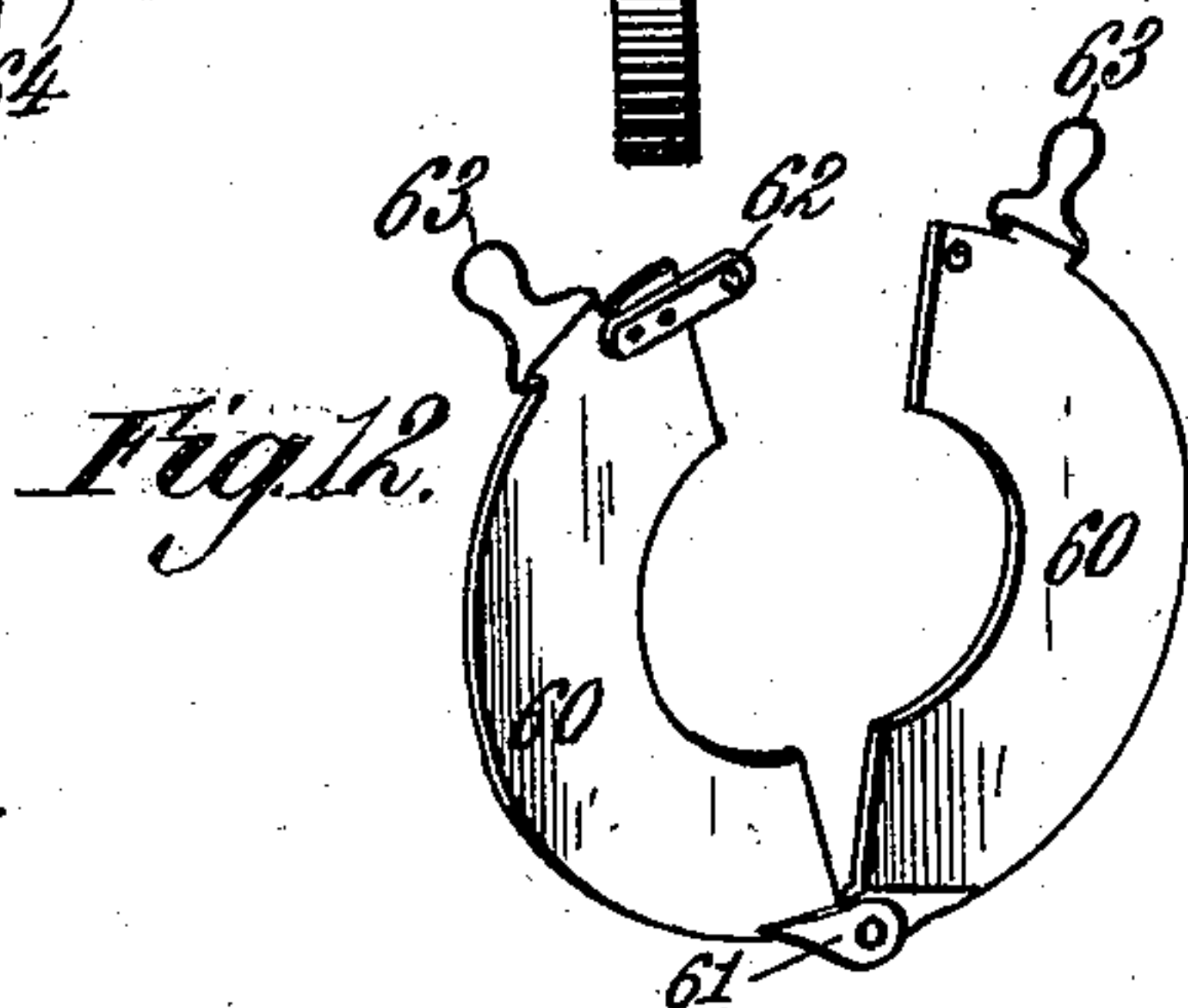
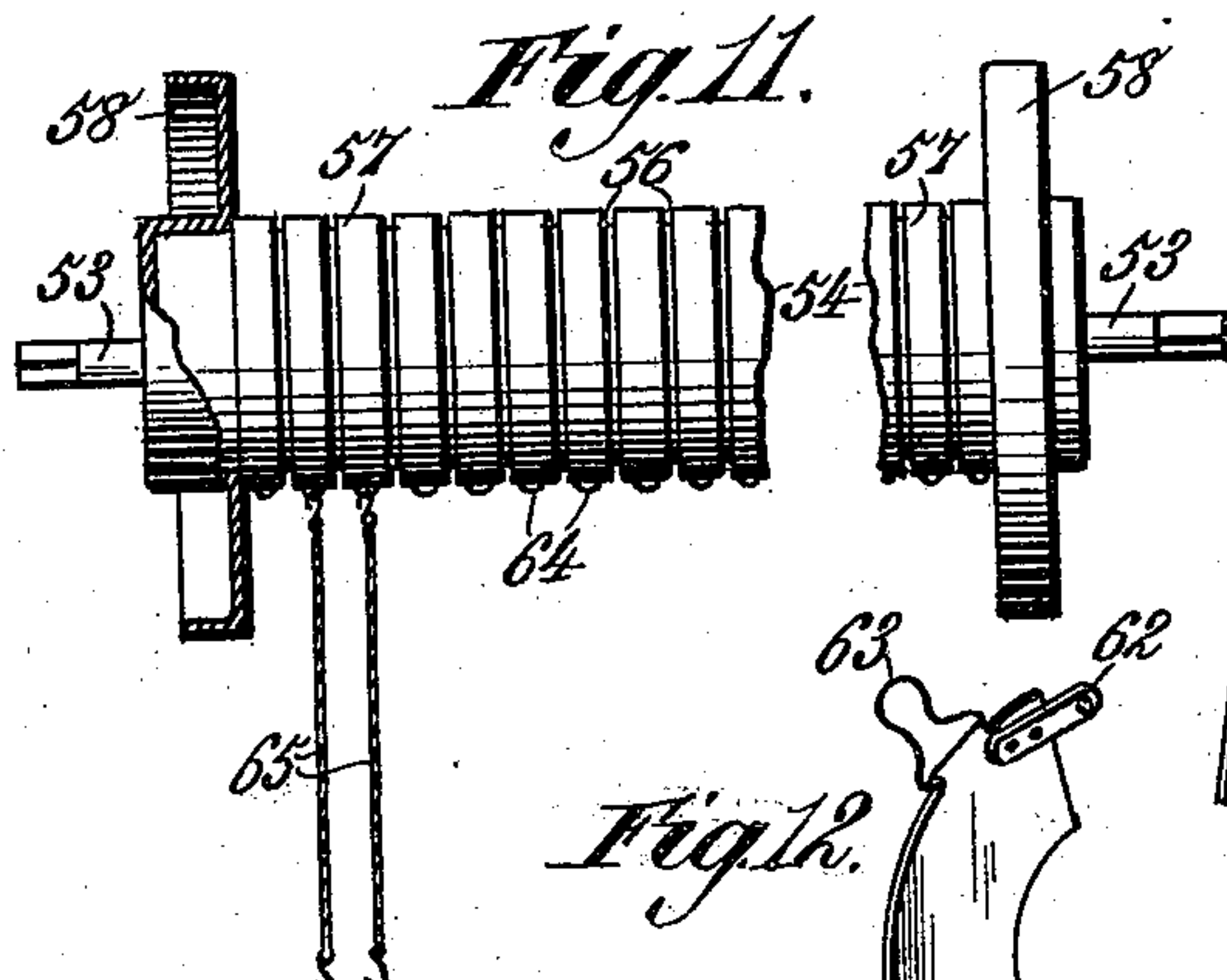
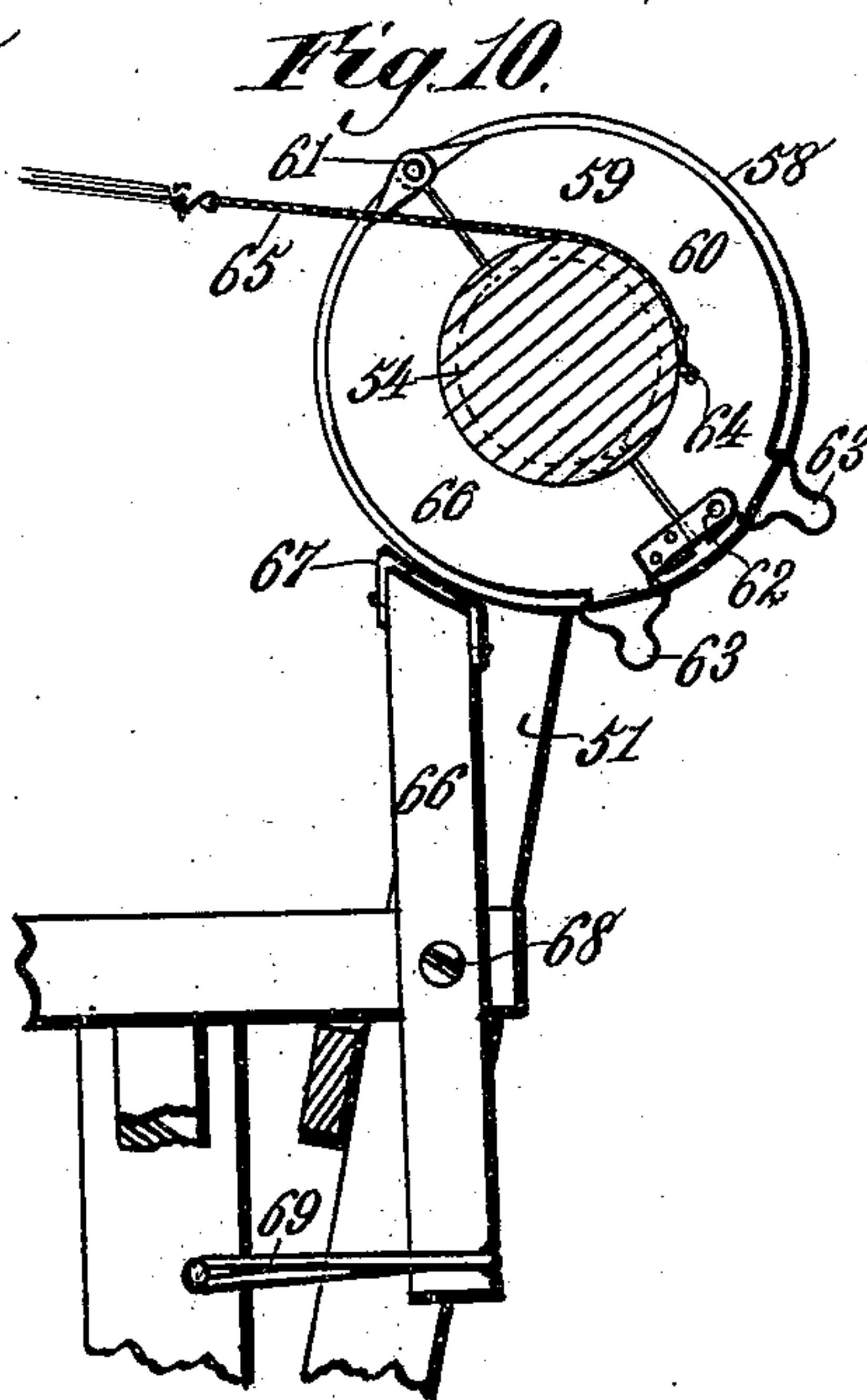
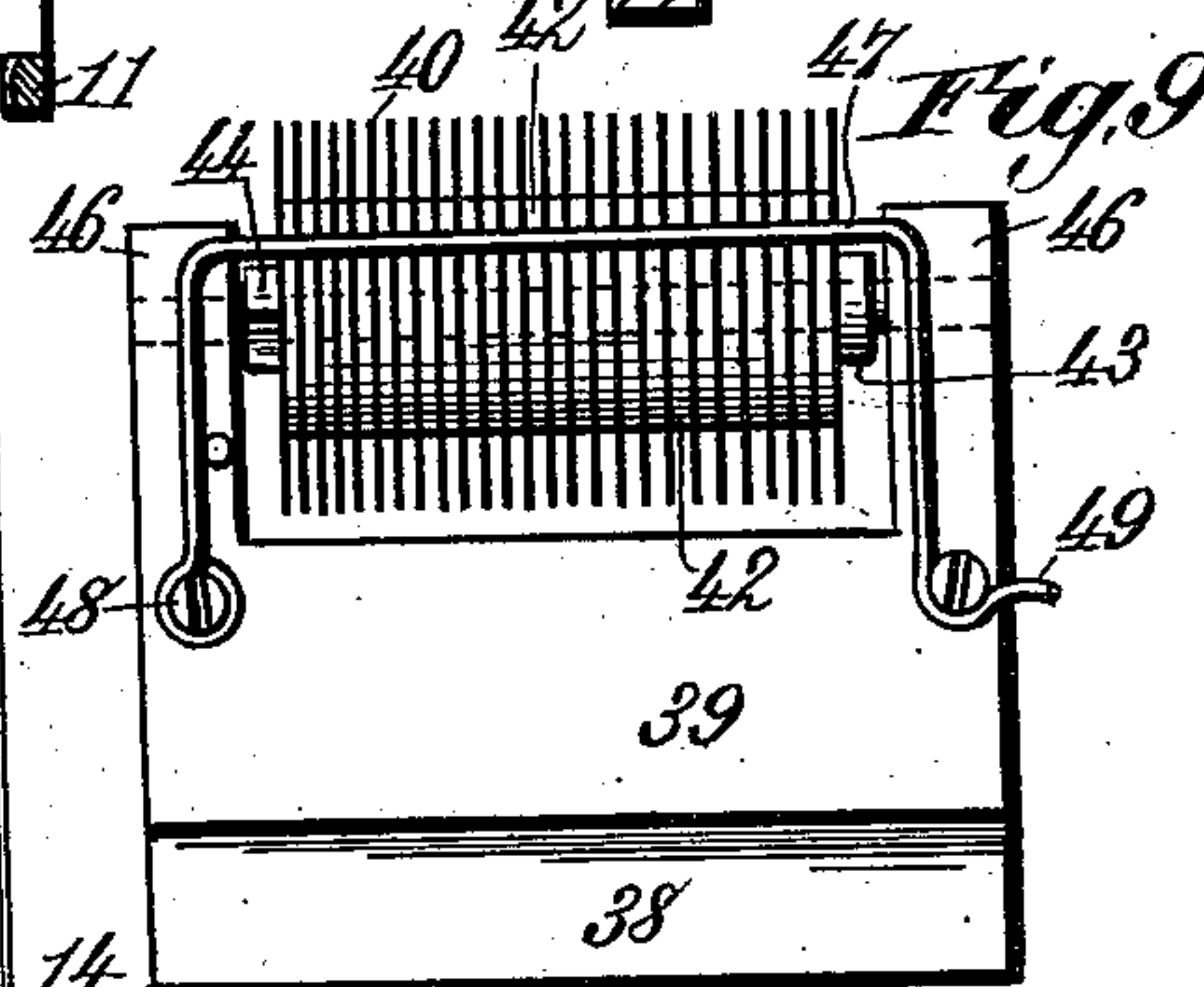
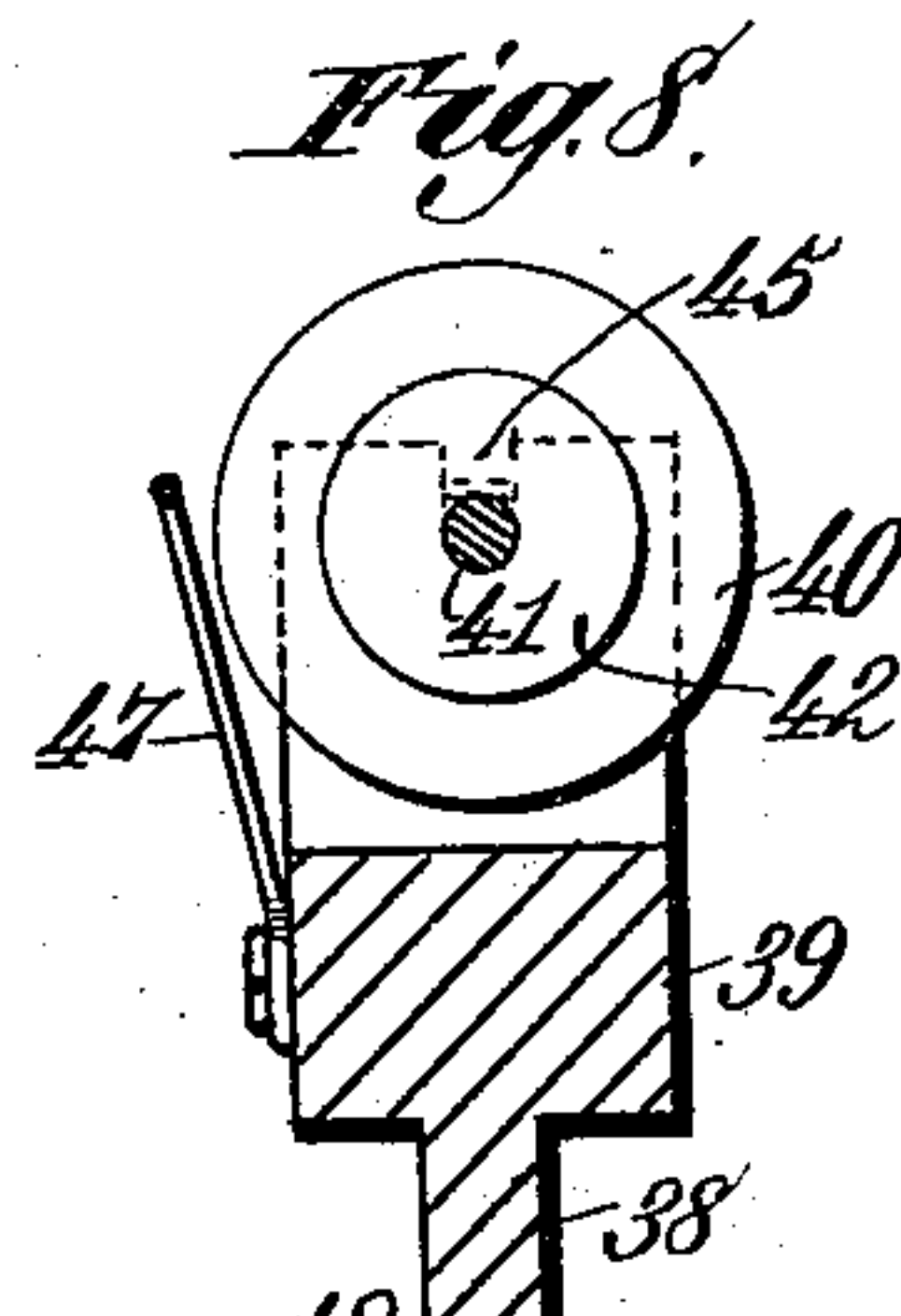
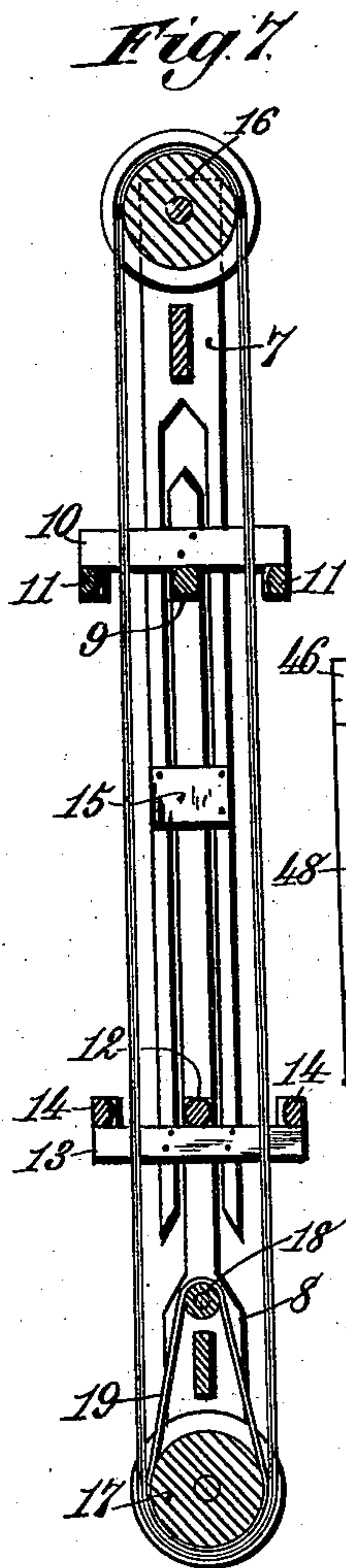
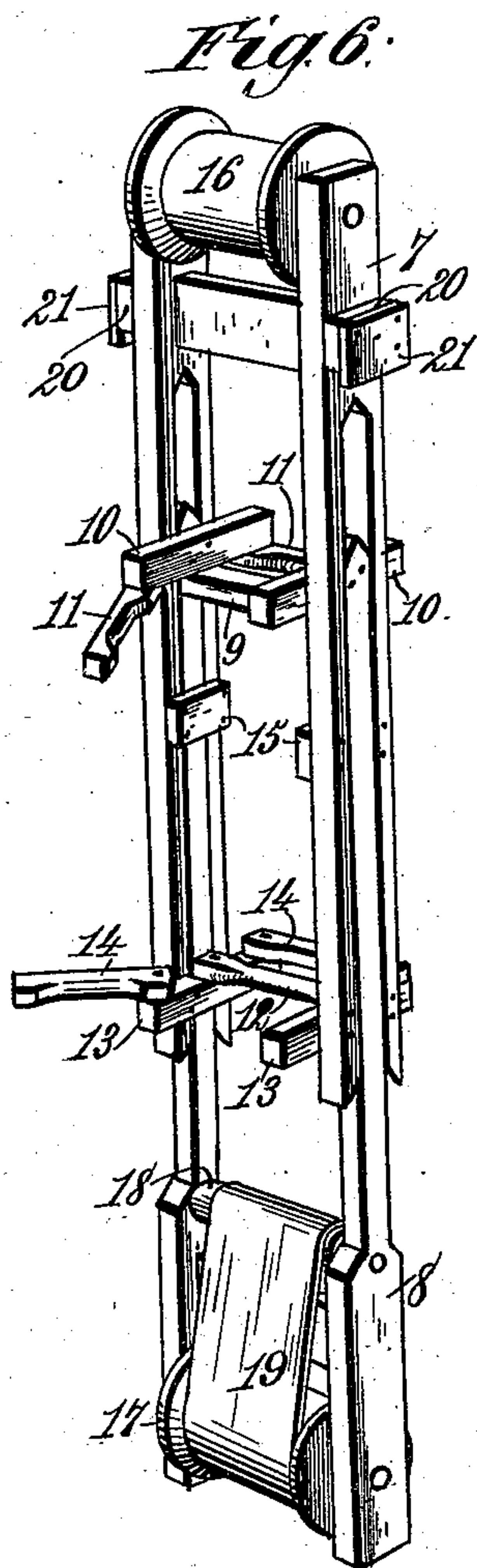
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3 Sheets—Sheet 3.

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Patented Mar. 10, 1896.



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UNITED STATES PATENT OFFICE.

JONATHAN U. BAKER, OF STOUTSVILLE, OHIO.

WARP-BEAMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 556,172, dated March 10, 1896.

Application filed August 16, 1895. Serial No. 559,514. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN U. BAKER, a citizen of the United States, residing at Stoutsville, in the county of Fairfield and State of Ohio, have invented certain new and useful Improvements in Warp-Beaming Mechanisms, of which the following is a specification.

My invention relates to warp-beaming mechanisms, and has for its object to provide a device adapted to be used by hand weavers to transfer the warp from the skeins as they come from the manufacturer direct to the warp-beam, thus dispensing with the labor of spooling the warp and other intermediate work.

Another object of my invention is to provide an improved skein-carrier adapted to receive the skein just as it comes from the manufacturer, and which will act also as a tension device, and will, moreover, by reason of its peculiar construction, effectually prevent any loose ends or loops in the skein from becoming wrapped on or entangled with the carrier.

A further object of my invention is to provide an improved series of guides and tension devices between the skein-carriers and the warp-beam that will enable the warp to be wound on the beam in a firm, even manner ready for weaving.

A still further object is to provide a device intermediate the skein-carriers and the warp-beam for accurately measuring the amount of material wound on the beam.

Still another object is to provide a warp-beam having devices thereon of improved novel construction, and adapted to be used in conjunction therewith for receiving threads of different colors and winding them on the beam in independent sections ready for weaving.

These objects I accomplish in the manner and by the means hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved device. Fig. 2 is a vertical transverse section taken on the line 2 2 of Fig. 1. Fig. 3 is a front elevation of the skein-carrier frame, showing the warp-measuring mechanism. Fig. 4 is a central vertical sectional view of the warp-beam, the tension and measuring devices, and the front end of the skein-carrier frame. Fig. 5 is a top plan view of the parts shown in Fig. 4.

Fig. 6 is a detail perspective view of one of the skein-carriers, the same being shown empty and open ready to receive the skein. Fig. 7 is a central vertical sectional view of one of said skein-carriers, the same being shown filled and ready for warping. Fig. 8 is a detail vertical sectional view of my improved disk-roller guide. Fig. 9 is a detail rear elevation of said disk-roller guide. Fig. 10 is a detail vertical sectional view of the warp-beam and the brake therefor. Fig. 11 is a detail elevation of said warp-beam; and Fig. 12 a detail perspective view of one of the disks for guiding the warp onto the warp-beam.

Similar numerals of reference indicate corresponding parts in the several views.

In the said drawings, the numeral 1 denotes the base of the skein-carrier frame, having attached thereto at front and rear the vertical supports 2. Running longitudinally of the frame are the central beams 3 4, the upper one, 3, of which is provided with the two longitudinal grooves 5, for a purpose hereinafter described. Attached to the beams 3 4, and projecting to each side thereof, are the transverse partition-boards 6, forming on each side of the beams a series of pockets to receive the skein-carriers.

Referring now to Figs. 6 and 7, I will describe the construction of the skein-carriers, a description of one of which will suffice for all. This carrier consists of the two sections 7 and 8, the upper one, 7, having its side bars bifurcated to receive the side bars of the section 8, vertically movable therein, the two sections thus forming a telescopic carrier. At the upper ends of the side bars of the section 8 are provided the separating-bar 9 and the cross-bars 10, the latter carrying the pivoted guides 11. In a similar manner the lower bifurcated ends of the side bars of the section 7 are also provided with the separating-bar 12, cross-bars 13, and pivoted guides 14. About midway of their length the bifurcated side bars of the section 7 are provided with the cross-bars 15 to limit the downward movement of the bars 9, and thus prevent the separation of the two sections.

In the upper end of the section 7 is mounted a skein-receiving spool 16, and in the lower end of the section 8 is also mounted a similar spool 17, as shown. These spools are mounted

on shafts, so as to be freely revoluble thereon. At a point a short distance above the spool 17 is also mounted in the section 8 a roller 18, around which and the spool 17 passes an apron 19. This apron subserves the important function of catching and guiding any loose ends or loops in the skein around the lower spool 17, thus preventing the liability of entanglement with the said spool.

In order to place the skein onto the carrier it is only necessary to open the pivoted guides 11 and 14 and telescope the sections. The skein being then placed about the spools and the guides closed, the lower section 8 will drop of its own weight, thus holding the skein taut on the carrier.

On the sides of the upper section 7 near its top are fixed the blocks 20, having fastened thereto the lugs 21, preferably formed of stiff leather and projecting somewhat below the lower edges of said blocks, as shown. Now when a carrier is filled and it is desired to hang it in the carrier-frame, it is only necessary to catch the lower end of one of the lugs 21 in one of the grooves 5 in the beam 3, as shown in Fig. 2. The lower beam 4 will keep the carriers vertical when hung in place by reason of the sides of the carriers resting against the sides of said beam. By placing lugs on each side of the skein-carriers the skein may be put on said carriers without regard to the direction in which it will run off, as the carriers may be hung in the frame either way.

Mounted on a transverse bar 22 at the upper front end of the carrier-frame is an intermediate guide and tension device consisting of a series of vertical pins 23, and a pivoted cross-bar 24, rubber lined on its under surface as at 25. Enough pins 23 are provided to have a separate space there between for the thread from each skein-carrier in the frame. The tension-bar 24 is pivoted at one side on the hinge 26, while the bar 22 has a locking device 27 to engage with the other end of the tension-bar to retain it in its closed position, as shown in Fig. 5.

Referring now to Figs. 1 and 3, there will be seen mounted on a bracket 28, located on the front end of the carrier-frame, a vertical wheel 29. This wheel, as seen in Fig. 4, is grooved on its periphery, said groove being rubber lined, as at 30, and is fixed to and rotatable with the shaft 31 mounted in suitable bearings on the bracket 28. This shaft projects for some distance to one side of said wheel and has formed thereon a worm-gear 32 meshing with teeth on the periphery of a vertical wheel 33, mounted and rotatable on a bearing on the bracket 28. This bearing has thereon an adjustable pointer-arm 34, while the wheel 33 is provided on its front face near its outer edge with a series of division marks, preferably one for each tooth on its periphery. It will now be understood that the rotation of the wheel 29 once, will, through the worm-gear 32, turn the wheel 33 for a

distance of one of the spaces marked on its edge. As these spaces will be preferably provided with suitable numbers the pointer 34 will accurately indicate the number of revolutions of the wheel 29. It has been found in practice that by carrying two of the threads from the skein-carriers once around in the groove of the wheel 29, and then onto the warp-beam the said wheel will be rotated by the friction thereof and the amount of warp wound thus accurately indicated on the wheel 33. For instance, if the warp is to be used for carpet-weaving the wheel 29 may be made of such size that one revolution thereof will put enough warp onto the beam to weave one yard of carpet.

Mounted preferably on the support 50 that carries the warp-beam and projecting at a slight angle to the rear thereof are the vertical side bars 35, carrying at their upper ends the cross-bar 36, having a longitudinal groove 37 in its top side, as shown in Figs. 4 and 5. This groove is adapted to receive a tongue 38 on the under side of a block 39 carrying a disk-roller guide for the warp. By reason of this tongue-and-groove connection between the block 39 and bar 36, the former is free to slide longitudinally on the latter. The disk-roller guide is seen best in Figs. 8 and 9, and consists of a series of metallic disks 40 mounted on a shaft 41, and having interposed between each disk a washer 42, as shown, the whole being clamped between an enlargement 43 near one end of the shaft 41 and a screw-nut 44 near the other end. This shaft is mounted and rotates in grooves 45 in the bearings 46 on the block 39. A wire loop 47, hinged at one side at 48 to the back of the block 39 and hooked at 49 on the other side, serves to hold the threads in place between the disks 40. This loop can be readily unhooked and turned up out of the way to permit the insertion of the threads in the disk-roller guide when desired. It will be understood that the number of disks 40 corresponds with the number of pins 23 to provide a separate space for each thread coming from the skein-carriers.

Projecting vertically from the warp-beam support 50 are the uprights 51, slotted at their upper ends, as at 52, to receive the shaft 53 of the warp-beam 54, as shown in Figs. 1, 5 and 11. This shaft is squared at either end to receive a crank-handle 55 for rotating the same. Referring now more particularly to Figs. 5 and 11, the particular construction of the warp-beam will be seen to be as follows: The beam proper is provided with a series of circumferential grooves 56, preferably from thirty-six to forty in number, thus dividing the beam into as many sections 57, as shown. On the ends of the beam are the metallic end pieces 58. A series of metallic disks 59 are provided and adapted to be inserted and clamped in the grooves 56 in the beam. These disks are best seen in Fig. 12 and are each formed of two semicircular sections 60, hinged

together at one side at 61 and provided with a suitable catch 62 at the other side. Suitable handles 63 are also provided for manipulating the same. In practice two of these disks are inserted in adjoining grooves 56 in the warp-beam and the warp is then wound thereon between the same, thus forming what is known as a "bout." It is customary to fill the beam beginning at one end and working along to the other end, thus forming a series of separate bouts, one on each section 57 of the beam. Thus but two of the disks 59 are necessary when the article to be weaved is composed of but one or two colors, as when a section 57 is filled the right-hand disk can be removed and inserted in the next adjacent empty groove 56 in the beam and the filling of that section proceeded with, as seen in Fig. 5. It will be understood that on a filled beam with the disks removed the bouts act as a support for each other.

When five or six colors are to be used in weaving and it is desired to place a number of stripes of the same color at different points on the beam, a sufficient number of the disks 59 are employed to inclose these several sections and the said sections are filled *seriatim*, thus doing away with the necessity of removing and replacing the skein-carriers having that color. The other colors are then inserted on the desired sections on the beam and the latter is then ready to be removed from its frame and placed in the loom ready for weaving.

As shown in Figs. 10 and 11, each section 57 is provided with a suitable eye 64, adapted to receive the hooked end of a cord 65, to the other end of which the threads are attached when the section is to be filled. After a section is filled the ends of the threads are tied together and pinned to the body of the bout, thus holding the same securely in place.

The rotation of the warp-beam is in the direction of the arrow in Fig. 1, and to prevent rotation in the opposite direction I provide a friction-brake consisting of the bar 66, having its upper end shod with rubber 67 and engaging with one of the end pieces 58 of the beam, and pivoted at 68 to the beam-support. At its lower end this bar has engaged therewith a rubber or other spring 69 attached to the beam-support. The operation of this brake will be obvious.

From the above description the operation of my device will be seen to be as follows: The skein-carriers are placed on a suitable filling-rack and filled with the skeins as they come from the manufacturer, in the manner hereinbefore described. They are then hung in the frame by their lugs 21, as described, the said frame being shown adapted to receive two longitudinal rows of these carriers, thirteen in each row, though this number may be increased or decreased, if desired. The loose ends of these skeins are then carried forward and each one passed through a separate space between the pins 23, the tension-bar being unhooked and thrown upward on

its pivot 26 to admit them. This bar is then brought down again and hooked in place, the rubber-lined surface thereof acting as a tension device on the threads. The threads are then carried forward to the disk-roller guide, care being taken first to carry two of said threads once around the grooved rubber-lined periphery of the wheel 29 and thence onto the disk-roller guide. The threads are passed one between each space formed by the plates 40 on said guide, the wire loop being unhooked and raised out of the way. The loop is then brought down and hooked, thus firmly pressing the threads onto the disk-roller guide, as clearly shown in Fig. 4. The threads are then carried forward and their ends attached to the hooked end of the cord 65, hooked to the particular section 57 on the beam to be filled, two of the disks 59 being properly located thereon ready for filling, as shown in Figs. 5 and 10. Now by rotating the handle the threads are evenly and firmly wound onto said beam. When all or as many sections as may be desired on the beam have been filled, the latter can be lifted from its bearings and placed in the loom ready for weaving therefrom in the usual manner.

I have shown in Fig. 5 a section in the central part of the beam in the act of being filled; but it will be readily understood that by reason of the tongue-and-groove connection between the disk-roller guide-block and its transverse supporting-bar 36 the former will slide longitudinally on the latter to assume a position approximately opposite to the section to be filled when the matter is at either end of the beam.

An important function is accomplished by forming the skein-carriers each in two sections, one telescoping in the other, as they thus act as tension devices on their respective skeins, the lower sections gradually dropping of their own weight as the threads are unwound and keeping the skeins always taut. A further important function is performed by the aprons 19, at the lower ends of the skein-carriers, in that they serve to effectually catch and carry any loose ends or loops in the skeins around the lower spools 17, thus preventing any entanglement with said spools.

A further general résumé of the operation of the device will disclose that the telescopic skein-carriers, the rubber-lined tension-bar 24 and the disk-roller guide act conjointly to exert the proper tension on the threads as they are wound on the beam, the disk-roller guide serving also as an effective guide for the threads at the point where they are brought together and doing away with any liability of breaking at that point, due to the passage of any knots or kinks in the threads, so common with devices of this class heretofore in use. Moreover by means of my improved indicating mechanism the amount of warp wound onto the beam can be accurately determined at any time.

I have heretofore mentioned the application

of my improved device to carpet-weaving; but I wish it to be distinctly understood that I do not limit myself to this particular use, as it may be employed for weaving of any character. I have also shown in the drawings the skein-carrier frame and the warp-beam support formed separate; but it will be understood that these may be mounted on a suitable common base, if desired.

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

1. In a warp-beaming mechanism, the combination with a warp-receiving beam, and 15 guide and tension devices, of a series of removable skein-carriers, lugs on the sides of said carriers, and a carrier-frame having a horizontal beam grooved on its upper surface to receive the lugs on said carriers and thereby support the same, substantially as described.

2. In a warp-beaming mechanism, the combination with a series of skein-carriers, a beam for receiving the warp from said carriers, and intermediate guide and tension devices, of a skein-carrier frame consisting of a base, end uprights, upper and lower horizontal beams the upper beam having grooves to receive and support the skein-carriers, and 30 transverse partition-boards to form pockets to receive said skein-carriers, substantially as described.

3. In a warp-beaming mechanism, the combination with a series of skein-carriers and 35 means for supporting the same, and a beam for receiving the warp, of an intermediate combined guide and tension device consisting of a series of vertical pins providing a separate space therebetween for each thread, and a 40 pivoted tension-bar having its under surface rubber lined and adapted to bear on the threads just before their passage between the vertical pins, substantially as described.

4. In a warp-beaming mechanism, the combination with suitable skein-carriers, and a beam for receiving the warp, of an intermediate disk-roller guide consisting of a rotatable shaft, a series of disks mounted thereon, intermediate washers between said disks one 50 for each thread, and a hinged wire loop at the rear of said disks for pressing the threads into contact with the washers, substantially as described.

5. In a warp-beaming mechanism, the combination with skein-carriers, a supporting-frame therefor, and a beam for receiving the warp, of an intermediate disk-roller guide consisting of a suitable block having a tongue on its under side engaging with a groove in a transverse carrying-bar and slidable thereon, a rotatable shaft mounted in said block, a series of disks carried by said shaft, intermediate washers between said disks one for each thread, and a wire loop at the rear of 65 said disks and hinged to the block for pressing the threads into contact with the washers, substantially as described.

6. In a warp-beaming mechanism, the combination with skein-carriers, a supporting-frame therefor, and a beam for receiving the warp, of an intermediate combined guide and tension device consisting of a series of vertical pins providing a separate space therebetween for each thread, and a pivoted rubber-surfaced tension-bar adapted to bear on the threads, and a disk-roller guide consisting of a transversely-movable block, a rotatable shaft mounted in said block, a series of disks carried by said shaft, intermediate washers between said disks one for each thread, and a wire loop at the rear of said disks and hinged to the block for pressing the threads into contact with the washers, substantially as described.

7. A skein-carrier for warp-beaming mechanism, consisting of two sections one telescoping within the other, means for preventing their complete separation, pivoted guides carried by said sections for guiding the skein thereon, and spools mounted in the upper end of one section and the lower end of the other section for receiving and carrying the skein, the whole adapted to operate as a tension device on the skein as it is being unwound, substantially as described.

8. In a skein-carrier for warp-beaming mechanism, the combination with the upper and lower spools thereof, of a separate roller mounted above the lower spool, and an apron adapted to pass around said roller and the lower spool and presenting an inverted V toward the upper spool for catching and carrying any loose ends or kinks around the lower spool without tangling therewith, substantially as described.

9. In a skein-carrier for warp-beaming mechanism, the combination of two telescopic sections, means for preventing their complete separation, pivoted guides on said sections, an upper and lower skein-receiving spool one mounted in each section, a roller in the lower section above the lower spool, and an apron adapted to pass around said roller and lower spool and forming an inverted V for carrying the skein around the lower spool, substantially as described.

10. A warp-beam having means for rotating the same, and having a series of annular grooves along the body portion thereof, and end pieces mounted on said beams, in combination with a series of removable disks adapted to be inserted in the grooves in said beam, and consisting each of two semicircular sections hinged together at one side and having fastening devices at their opposite sides to clamp them in the grooves in the warp-beam, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

JONATHAN U. BAKER.

Witnesses:

IRVIN P. SNYDER,
JNO. P. GIVEN.