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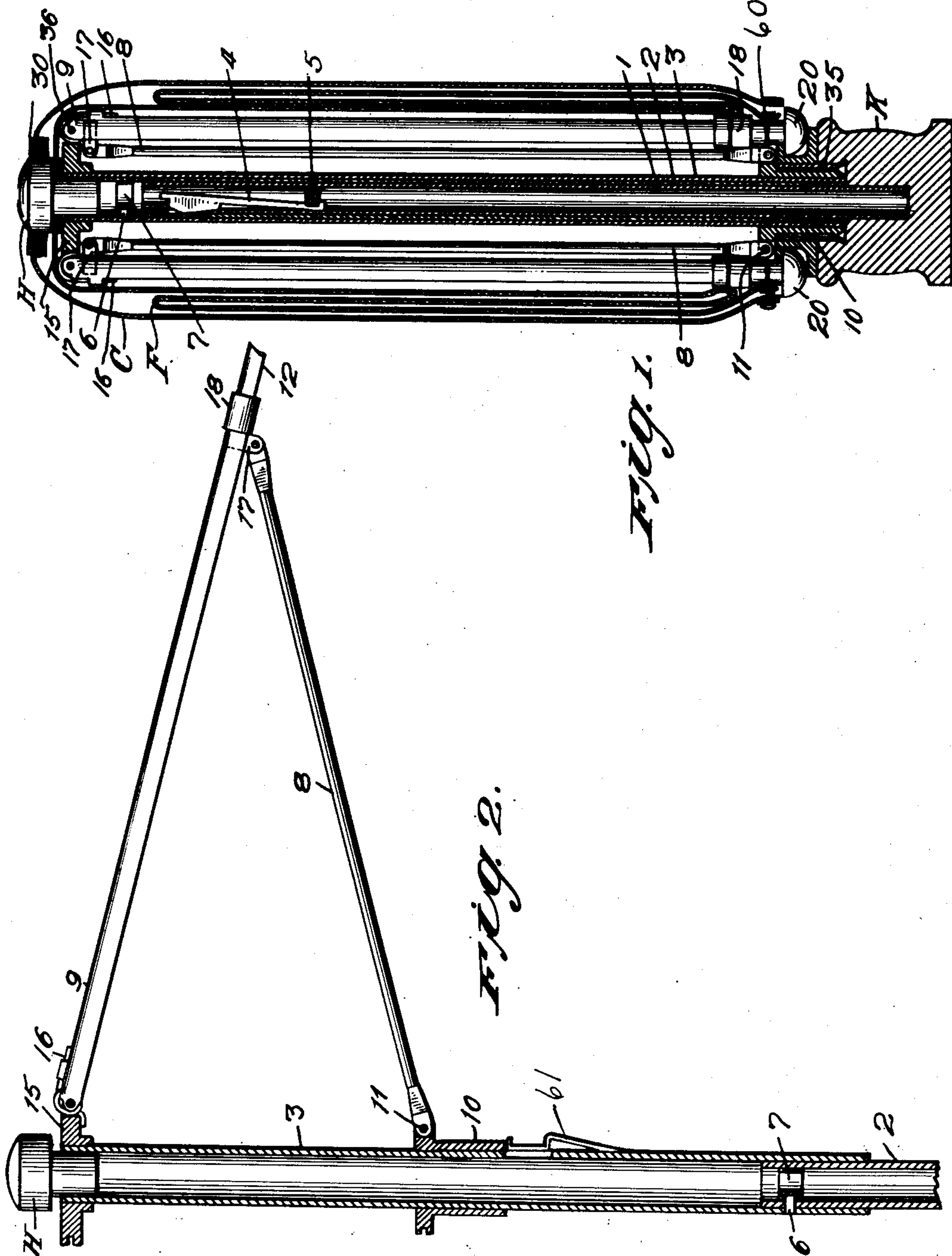
H. G. ADLER ET AL

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COLLAPSIBLE UMBRELLA

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3 Sheets-Sheet 1



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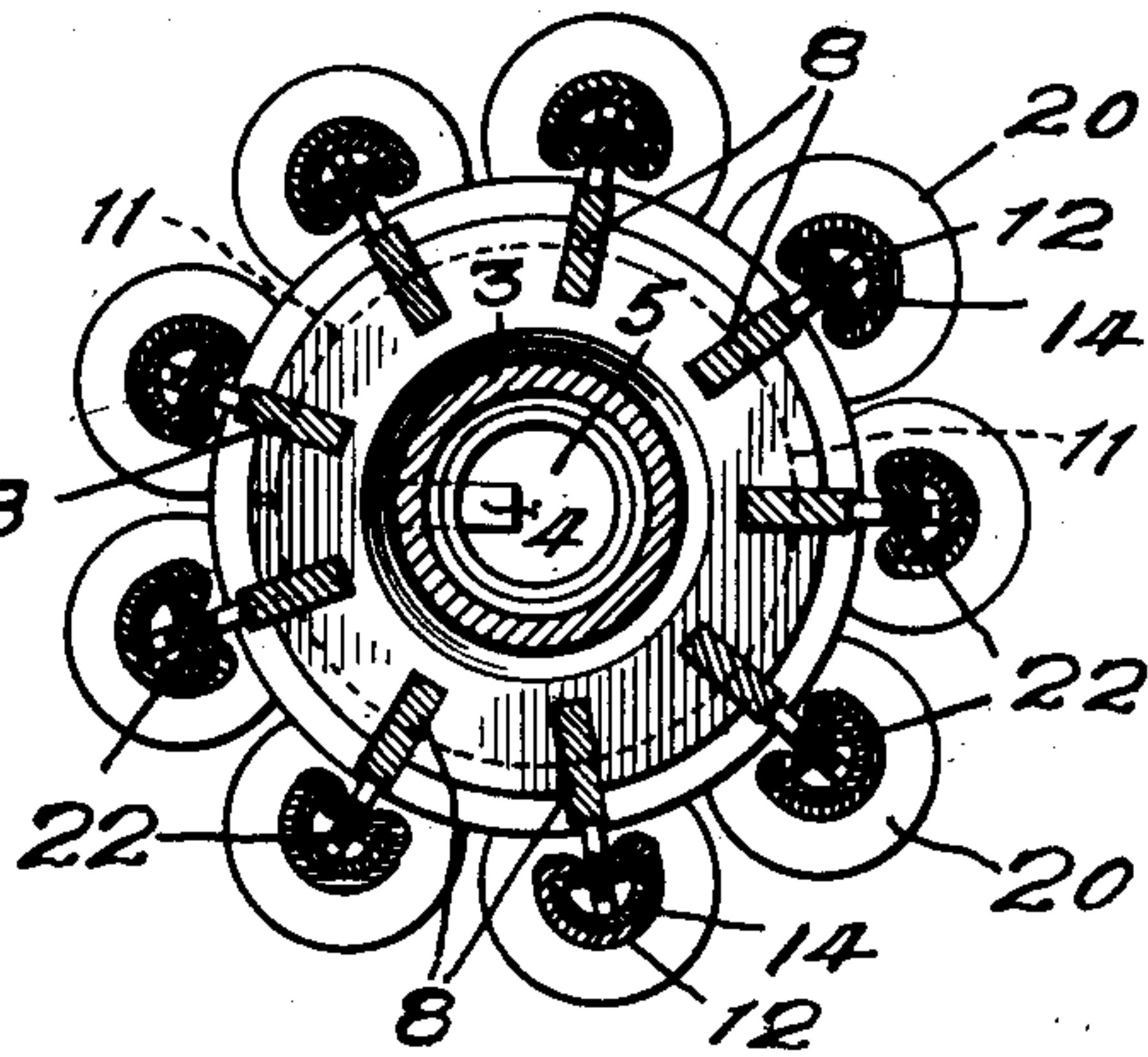
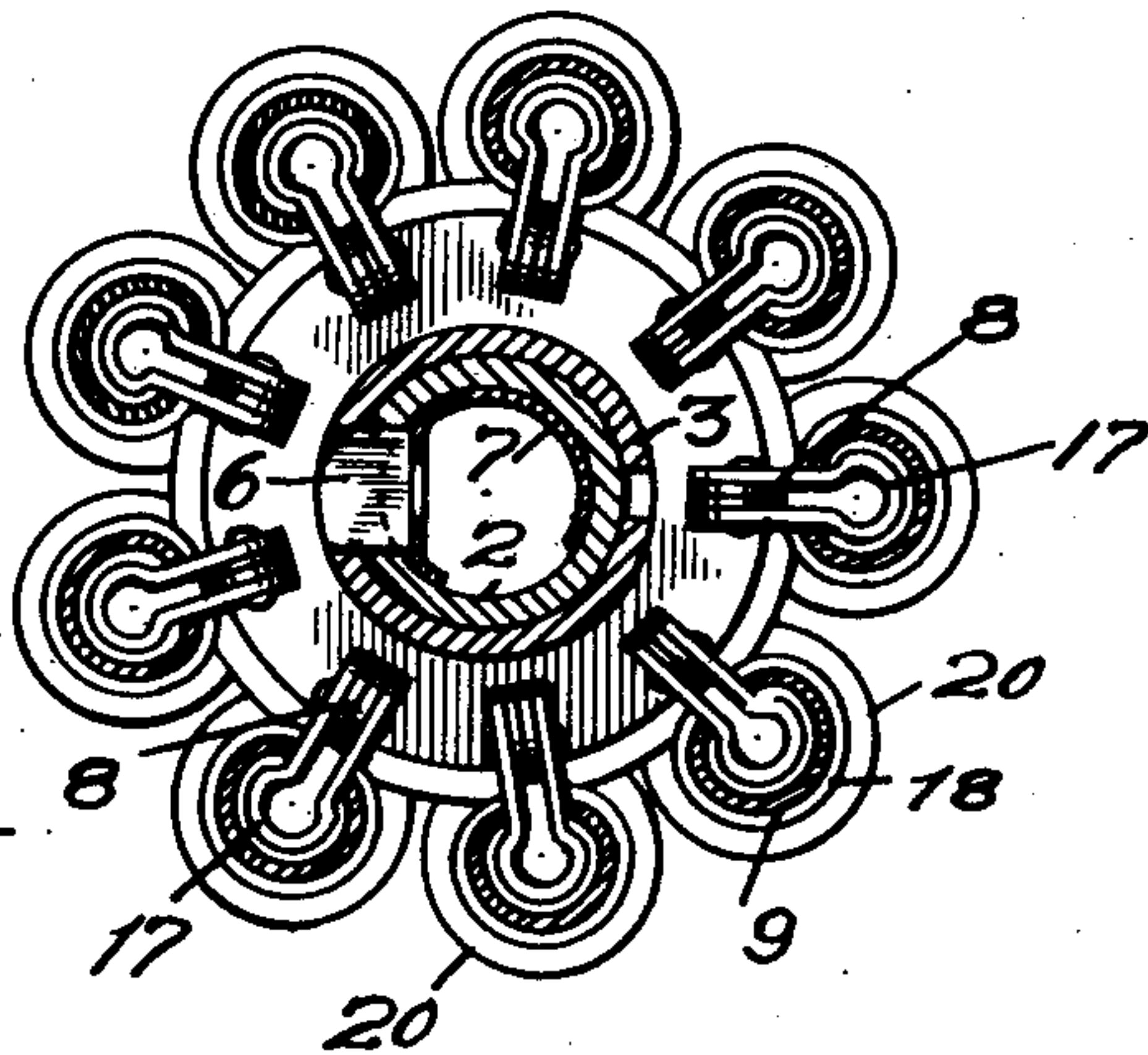
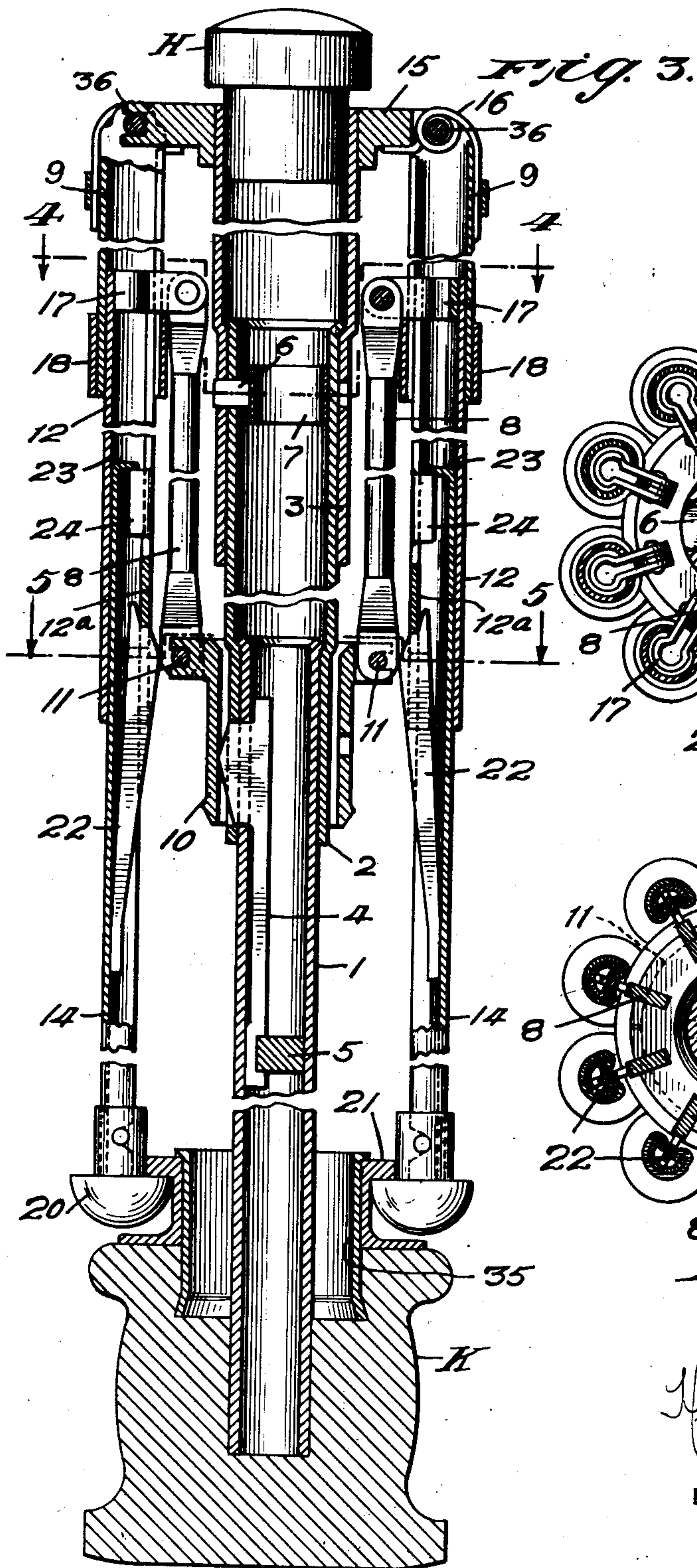
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*Fig. 5.*

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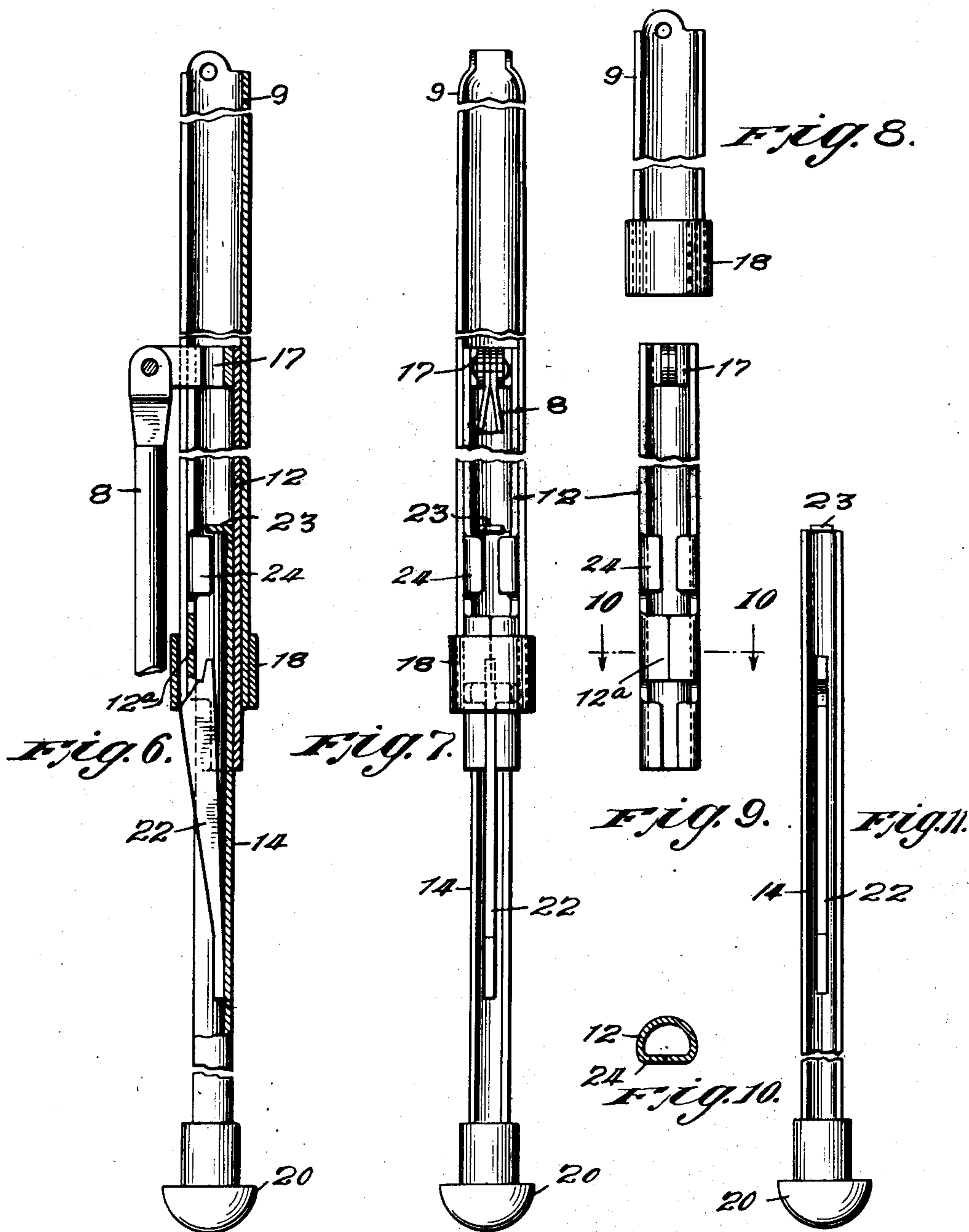
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COLLAPSIBLE UMBRELLA

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# UNITED STATES PATENT OFFICE

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## COLLAPSIBLE UMBRELLA

Application filed August 9, 1929. Serial No. 384,569.

Our invention relates to a new and improved collapsible umbrella.

One of the objects of our invention is to provide an umbrella of the collapsible type, and which is preferably made of telescopic members so that the umbrella can be extended to form a device of ordinary size, and it can also be readily collapsed into compact form for convenience in storage, shipment or use.

Another object of our invention is to provide an umbrella whose main parts are extensible, and to provide simple and efficient latch devices for holding the principal parts of the device in extended position.

Another object of our invention is to provide a device of this type whereby the latch devices previously mentioned can be conveniently released so as to permit the device to be collapsed.

Another object of our invention is to produce a device of simple and sturdy construction.

Other objects of our invention will be set forth in the following description and drawings which illustrate a preferred embodiment thereof, it being understood that the above general statement of the objects of our invention is intended merely to generally explain the same and not to limit it in any manner.

Fig. 1 is a side elevation partially in section, showing the umbrella in collapsed position.

Fig. 2 is a side elevation partially in section, showing a part of a rib in extended position, and also showing a part of the central rod or support of the umbrella, in extended position.

Fig. 3 is a view showing the umbrella in partially extended position, before the ribs are opened.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3.

Fig. 5 is a sectional view on the line 5—5 of Fig. 4.

Fig. 6 is an elevation partially in section showing one of the telescopic ribs.

Fig. 7 is a front elevation of the article shown in Fig. 6.

Fig. 8 is an elevation of a top or outer rib section and ring.

Fig. 9 is a front elevation of an intermediate rib section.

Fig. 10 is a sectional view on the line 10—10 of Fig. 9.

Fig. 11 is a front elevation showing an outer or bottom rib section and its locking device.

The umbrella has the usual holding knob K, and it is provided with a central rod or stick comprising an outer or lower telescopic member 1, an intermediate telescopic member 2, and a top telescopic or outer telescopic member 3. While we have shown the essential parts of the device formed in three adjustable or telescopic sections, it is to be understood that we are not limited to any particular number of adjustable sections, and that the telescopic relation between the parts merely illustrates one form of the invention.

The outer rod member 1 is connected to the knob K in any suitable manner and it is provided with a spring latch 4 having the shape shown in Fig. 3, the inner end of said spring latch 4 being held within the hollow inner member 1, by means of a plug member 5. The head of the spring latch 4 has the inclined contour shown in Fig. 3 and it can project through a slot in the wall of the inner member 1. Said head can also project through a corresponding slot in the intermediate rod member 2 when said slots of members 1 and 2 register, said position being shown in Fig. 3. Hence, when the intermediate sleeve or rod member 2 is slid to its outer or extended position, which is shown in Fig. 3, the head of the spring latch 4 automatically moves to the position shown in Fig. 3, so as to lock the intermediate member 2 in fixed position with respect to the inner member 1.

Likewise, and as shown in Fig. 3, the inner head of the outer member 1 is slightly enlarged, and the intermediate member 2 is correspondingly shaped, in order to limit the outer sliding movement of the intermediate member 2 on the outer member 1.

The intermediate member 2 is provided with a latch 6, clearly shown in Figs. 3 and 4. Said latch 6 has a laterally tapered or cam-like end, as shown in Fig. 4, and it is connected to a resilient ring or member 7 so that said ring or member 7 urges the outer



latch 6 into the position shown in Fig. 3, in which position it projects through slots in the members 2 and 3, in order to hold said members 2 and 3 against relative movement.

5 The outer end of the sleeve-like intermediate member 2 is also enlarged, as shown in Fig. 3, and the outer sleeve-like member 3 is correspondingly shaped, so as to limit the outer movement of the member 3 on the member 2.

10 The outer member 3 has a head H connected thereto in any suitable manner, as for example by means of a drive fit or by any suitable fastening device.

15 In the position shown in Fig. 3, the inner member 3 is turnable upon the intermediate member 2. When the outer member 3 is so turned, which can be conveniently done by manipulating the head K, the wall of the locking recess in the outer member 3 operates 20 upon the inclined surface of the latch 6 to force the same inwardly, until said latch 6 releases the member 3, so that said inner member 3 may be pushed outwardly towards the knob K.

25 The links 8 which are connected to the ribs of the umbrella have pivotal connections 11 to a slidable ring or runner 10 which can be moved to an inner position and to an outer position as shown in Figs. 1 and 2. As 30 shown in Fig. 1, the slidable runner 10, fits within the hollow member 35 which is suitably connected to the knob K, when the device is completely collapsed. The said runner 10 is provided with an ordinary spring 35 latch 61 which engages a suitable recess in the outer section 3, when the device is extended, this being clearly shown in Fig. 2.

When the device is to be collapsed, the runner 10 is released from the position shown in 40 Fig. 2 and said runner 10 is then moved inwardly in order to move the ribs inwardly. The outer section 3 is turned to release it from the intermediate section 2, and the inner section 3 is then slid outwardly or towards the 45 knob K. The outer end of the member 3 then passes between the runner 10 and the intermediate section 2, so that the head of the spring latch 4 is forced laterally until it releases the intermediate section or member 2.

50 Hence, the collapsible rod can be extended from the position shown in Fig. 1 to the position shown in Fig. 3 by pulling outwardly upon and also turning the knob K, while holding the head H, and it can be collapsed 55 from the extended position shown in Fig. 3 by first turning the knob K and then pushing inwardly upon said knob, while holding the head H.

60 The sleeve 35 is provided with a flanged sleeve 21 connected thereto, and the heads 20 of the ribs of the device are normally retained by the flange of the member 21, while the collapsible rod is being extended from the collapsed position shown in Fig. 1 to the extended 65 position shown in Fig. 3. The sleeve 21

is turnable on sleeve 35, any suitable means being used to prevent their separation, while permitting sleeve 21 to freely turn. Hence, when knob K is turned, the sleeve 21 can remain stationary, so that the heads of the ribs 70 also remain stationary, and parallel to the central axis of the device. A band 60 may be employed to keep the ribs in the position shown in Fig. 1.

75 In this embodiment, each of the ribs of the umbrella is illustrated as comprising three telescopic sections although as before mentioned, we do not wish to be limited to any particular number of sections, or to the specific shape or shapes shown for purposes of 80 illustration.

85 As shown in Fig. 3, the inner rod section 3 is provided with a ring 15 to which the inner rib sections 9 are pivotally mounted at 36. Coil springs 16 are provided and these urge 90 the ribs to the extended position shown in Fig. 2. The springs 16 may be strong enough to move the ribs to their extended or operative position or the springs may be somewhat weaker, so as to merely assist the action of 95 the runner 10 and the links 8 in moving the ribs to their operative position. In any event, the springs 16 are sufficiently strong so that when the heads 20 of the ribs are released, after the central rod has been extended to the position shown in Fig. 3, the ribs 100 initially turn until they assume an angle of about twenty (20°) degrees to the central axis of the device. The heads of the ribs can be held in the position shown in Fig. 3, by means 105 of any suitable device, such as a tape, strap or the like. In the position shown in Fig. 3, the ribs have been substantially fully extended, and it is merely necessary to swing the ribs about their pivots 36, to cause said ribs 110 to assume the open position shown in Fig. 2.

115 The inner rib section 9 is longitudinally slotted and it is provided with a collar 18 riveted or otherwise secured to its outer end. Each intermediate rib section 12 is also preferably longitudinally slotted and it is provided with a head portion 17 to which one of 120 the links 8 is pivotally connected. When the ribs are extended to the position shown in Fig. 3, the head portions 17 of the intermediate rib sections 12 abut the collars 18, so as 125 to prevent any further extension of the ribs. After the ribs have been initially inclined by the springs 16 as previously mentioned, it is merely necessary to push upwardly upon the runner 10. Since the links 8 are now inclined 130 to the ribs, the thrust exerted upon the links 8 causes them to swing the ribs laterally to the position shown in Fig. 2. If the ribs were not first inclined, the actuation of the runner 10 would merely slide the intermediate rib sections 12 upwardly upon the outer rib sections 9. However, the inclined positions of the links 8 and of the ribs causes the links to swing the ribs, without producing any rela-



tive sliding movement between the rib sections 12 and 9.

Each outer rib section 14 is provided with a head 20. In describing the rib section 14 as the outer rib section, reference is made of course to the positions of the parts when they are in the open condition shown in Fig. 2.

The outer rib sections 14 are provided with spring latches 22 which project through slots in the walls thereof. Hence, when the knob K is pulled outwardly, said spring latches 22 engage the lips 12<sup>a</sup> which are integral with the walls of the intermediate members 12, so as to hold the parts of the ribs in the extended position shown in Fig. 3. Each intermediate section 12 is provided with additional lips 24 which engages the inwardly bent flange 23 located at the inner end of the associated rib section 14, so as to limit the sliding movement between sections 14 and 12.

When the device is collapsed by pushing the knob K towards head H, the collars 18 which are connected to the outer ends of the rib sections 9, engage the inclined projecting faces of the latches 22, so that said latches 22 release the intermediate rib sections 12.

It is obvious that the operation of the device is extremely simple because in order to open the umbrella, it is merely necessary to pull the knob K into the position shown in Fig. 3, whereupon the springs 16 are effective to swing the ribs to their operative position, or to an initial inclined position, or else said ribs can be disengaged from the position indicated in Fig. 3 by hand, and the collar 10 can then be manipulated to open the umbrella.

In order to collapse the device, it is merely necessary to bring the parts into the position shown in Fig. 3, and to then turn the knob K, and to then push the same inwardly.

As shown in Fig. 1, the fabric cover F of the umbrella is connected to the ribs and to the head H in any suitable manner.

In order to present a neat appearance, the umbrella can also be provided with a case C made of any suitable fabric or material and this can be provided with an outer sleeve 30, which can fit snugly upon the head H.

It will be noted, as shown in Fig. 3, that a pair of slidable sections of the central rod are provided with latch means to hold them in extended position. It will also be noted that a succeeding rod section, namely, the section 3, is provided with an inner portion which operates as a control means to move said latch means into inoperative position when the device is collapsed. The rib sections are similarly constructed.

While we have shown a complete umbrella embodying various improvements, it is clear that one or more of these improvements could be incorporated into umbrellas whose construction would be different from that of the

preferred embodiment shown herein, so that these subcombinations could be utilized independently of the main combinations described herein.

In general, while we have shown a preferred embodiment of our invention, it is clear that numerous changes and omissions could be made without departing from its spirit.

We claim:

1. In a collapsible umbrella, the combination of an extensible central rod having sections relatively turnable upon each other and extensible ribs pivotally connected to said central rod, a holding knob rigidly connected to the outermost central rod section so that said holding knob can be manipulated to both pull upon said extensible central rod portion and to produce a relative turning movement between the sections thereof, latch means intermediate said sections operable by a pull upon said knob and by the turning thereof, and retaining means connected to said knob and turnable with respect thereto, said retaining means being adapted to retain the outer ends of said ribs when the device is collapsed, and to remain stationary with respect to said rib ends during the turning movement of said knob, whereby any twisting movement of the ribs with respect to the central axis of the device is substantially eliminated.

2. In a collapsible umbrella having a collapsible central rod which comprises a plurality of telescopic sections, a latch connected to one of said sections and adapted to hold the next section in extended position, said latch being movable to the inoperative position by a relative turning movement between the section to which it is connected and said next section, the outermost rod section being connected to a handle, a retaining member connected to said handle and turnable with respect thereto, and ribs pivotally mounted upon said central rod, each of said ribs comprising a plurality of relatively slidable sections so that said ribs are extensible, each outer rib section having a head adapted to be retained by said retaining member so that said ribs are extended when the central rod portion is extended, and said handle can be turned without turning said ribs.

3. In combination, a collapsible umbrella having a collapsible central rod comprising telescopic hollow sections, each rod section being wider than and sliding upon the outside of the preceding rod section, the outermost rod section having a longitudinal slot and also having a spring latch connected to its interior, said latch having a head adapted to project through said longitudinal slot, the second rod section also having a longitudinal slot through which the head of said latch is adapted to project in order to hold said sections in extended position, a runner located on said rod and adapted to surround



the head of the latch when the rod is in extended position, extensible ribs pivotally connected to said central rod, links connecting said runner to said extensible ribs, and  
 5 a third rod section adapted to pass between said runner and said second rod section when the device is collapsed, in order to force said latch head inwardly in order to release it from said second rod section.

10 4. A collapsible umbrella comprising a collapsible central rod having a runner mounted thereon, extensible ribs, each of which comprises a hollow inner section and a hollow intermediate section and a hollow outer section,  
 15 the several inner rib sections being pivotally connected to the central rod, links pivotally connected to said runner at their inner ends, said links, each being pivotally connected at its outer end to a member slidably retained within one of said inner rib sections,  
 20 said inner rib sections and said intermediate rib sections, each having cooperating members adapted to limit the extension of said ribs, each inner rib section and its intermediate rib section also having a member adapted to limit its movement, the outer rib sections,  
 25 each having a latch connected to its interior wall, said latch extending through an opening in the wall of said outer section and engaging the associated intermediate section so that said latch holds the corresponding outer and intermediate section in relative extended position, the adjacent surfaces of said latch and of the outer end of the inner rib section  
 30 being shaped to exert a cam action so that said latch is moved out of engagement with said intermediate rib section, when said outer section is moved inwardly relative to said inner rib section.

40 5. In a collapsible umbrella, the sub-combination of a central rod portion having relatively slidable inner and outer sections, the inner section having independent and spring-actuated and laterally movable latch means  
 45 connected thereto, said sections having openings in their respective walls which are adapted to register, said latch being located within said inner section and at the opening of the inner section so that it can extend into  
 50 both said openings in order to hold said sections in a predetermined relative position, said other section being turnable on the inner section, the adjacent surfaces of the outer end of said latch means and of the lateral wall of the opening in the outer section being shaped to constitute cam means, so that said latch means is moved inwardly and out of the opening in the outer section when said outer section is turned relative to said inner section.

60 6. A collapsible umbrella comprising a collapsible central rod, extensible ribs pivotally connected to said rod, each rib comprising an outer section, and an intermediate section and an inner section, the outer rib section being  
 65 located within the intermediate rib section

and the intermediate rib section being located within the inner rib section. a runner mounted on said rod, links pivotally connecting said runner to said several extensible ribs, the outer end of each link having sliding connection with one of said ribs, each outer rib section having a headed outer end and having a spring latch connected to said section, said spring latch being adapted to engage the intermediate rib section and to hold said outer rib section in extended position, the outermost rod section having a handle connected thereto, said handle being of sufficient width to cause the heads of the outer rib sections to contact therewith when the ribs are moved to their inner position and the device is collapsed, said inner rib sections then acting to force the heads of said latches inwardly so as to release them from the intermediate rib sections.

7. A collapsible umbrella comprising a collapsible central rod portion having a runner mounted thereon, an extensible rib, said rib comprising a hollow inner section and a hollow intermediate section and a hollow outer section, the inner rib section being pivotally connected to the central rod, a link pivotally connected to said runner at its inner end, said link being pivotally connected at its outer end to a member slidably retained within said inner rib section, said inner rib section and said intermediate rib section having cooperating members adapted to limit their relative extension, said outer rib section and its intermediate section also having members adapted to limit their extension, the outer rib section having a latch connected to its interior wall, said latch engaging the corresponding intermediate section when the rib is in extended position.

8. In a collapsible umbrella which has a central rod and a runner which is slidably located on said central rod, and a link which is pivotally connected to said runner, the sub-combination of a collapsible rib which comprises relatively slidable inner and outer sections, the inner rib section having a head portion which is slidably located in the interior thereof and which is pivotally connected to said link, and stop means provided on said inner rib section and adapted to stop the outward movement of said head portion.

In testimony whereof we affix our signatures.

HYMAN G. ADLER.  
 NATHAN A. MATTER.