

Jan. 6, 1953

C. W. KNAPP

2,624,611

GRAPPLING UNIT

Filed June 27, 1952

Fig. 1

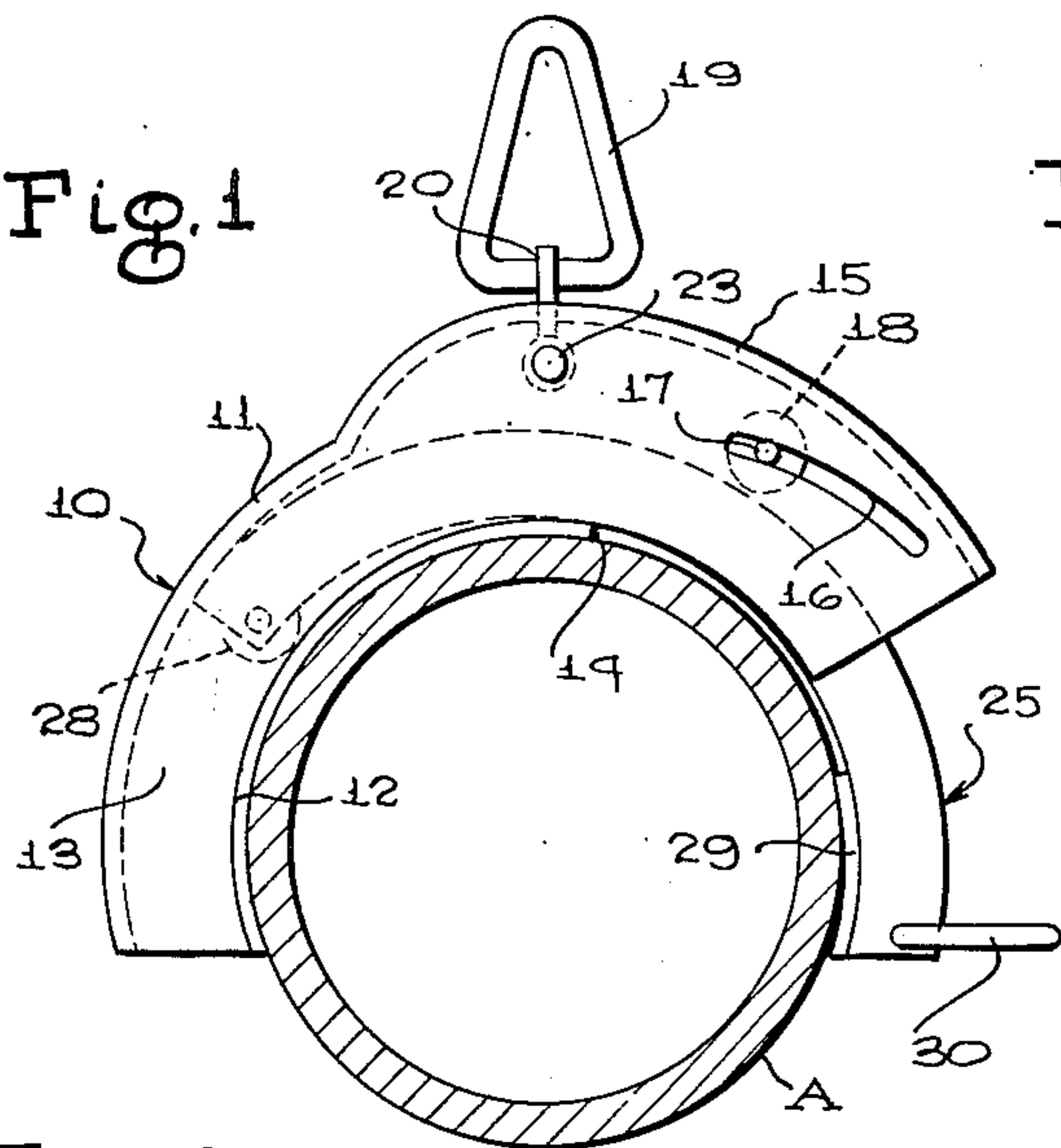


Fig. 2

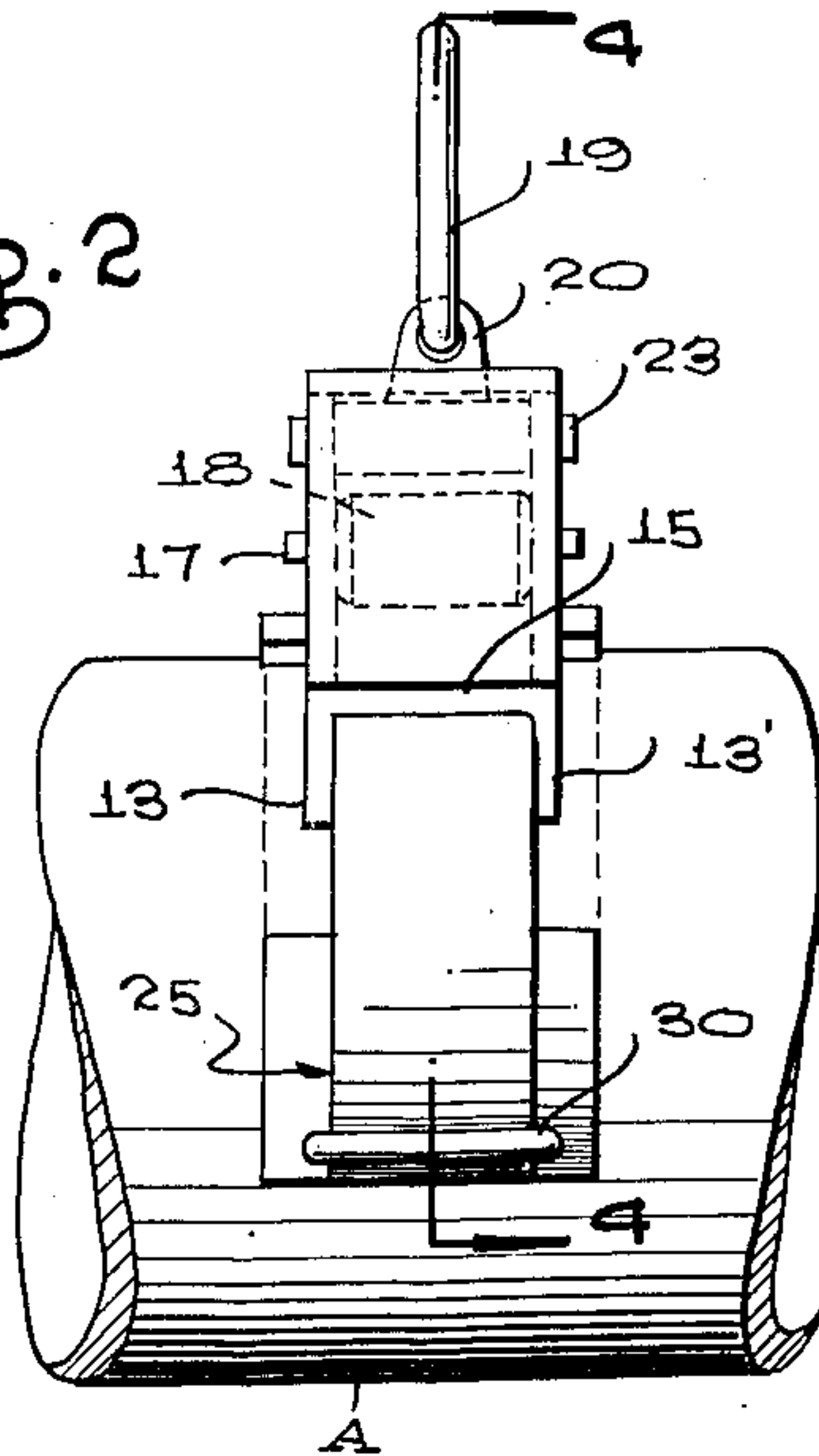


Fig. 3

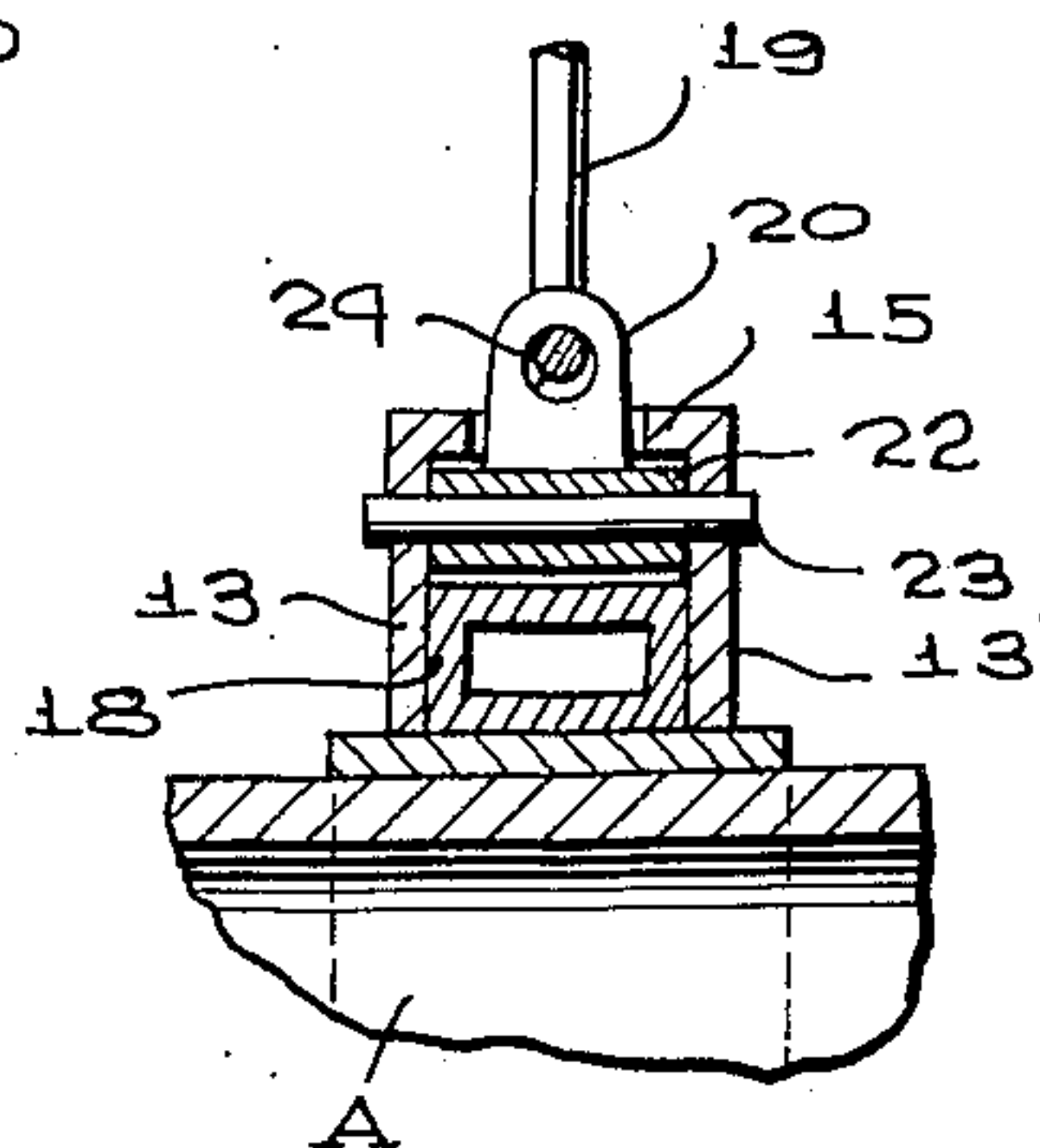
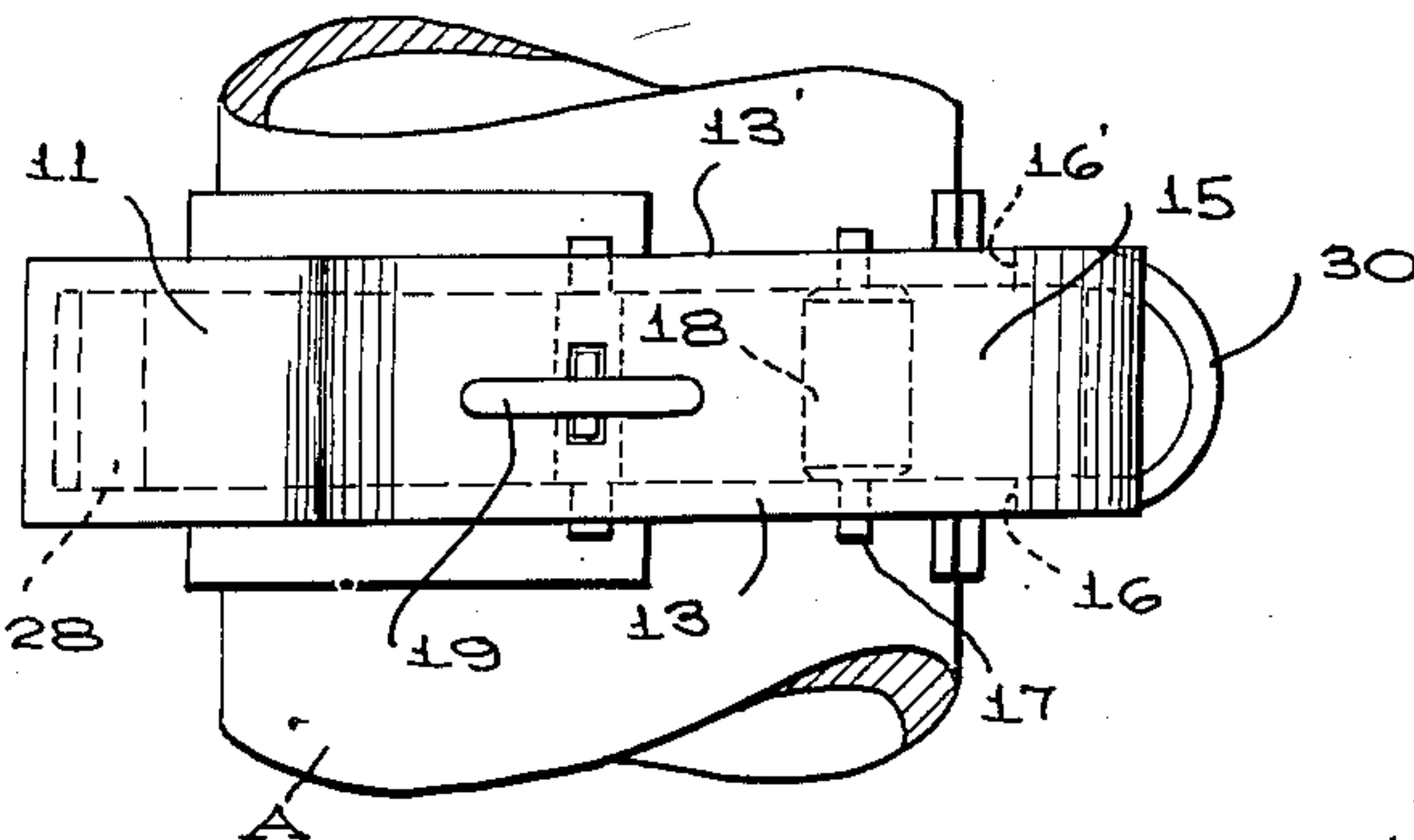


Fig. 4

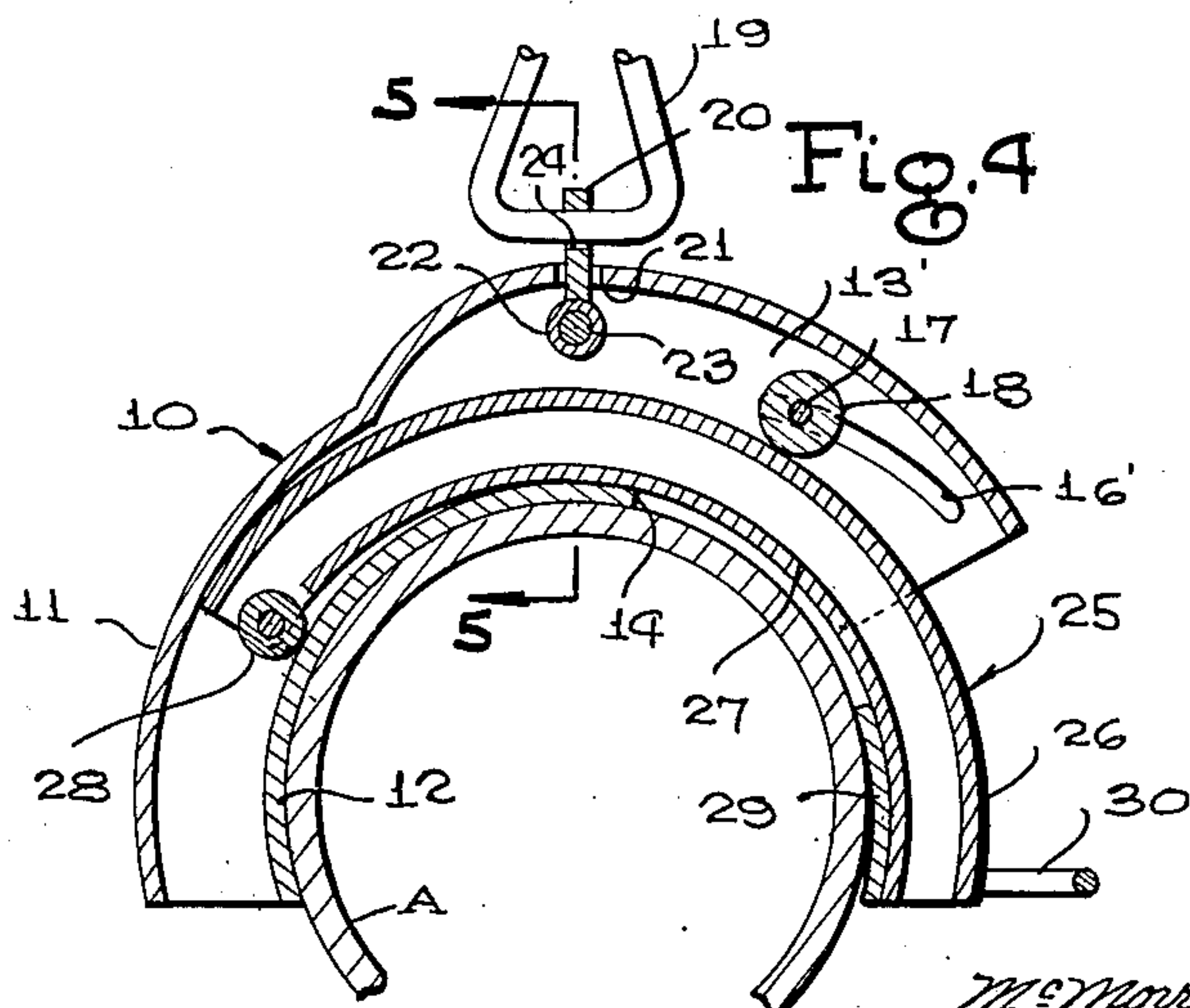


Fig. 5

INVENTOR.
CHARLES W. KNAPP

BY

McMorrow, Berman & Davidson
ATTORNEYS

UNITED STATES PATENT OFFICE

2,624,611

GRAPPLING UNIT

Charles W. Knapp, Oxford, Kans.

Application June 27, 1952, Serial No. 296,019

5 Claims. (Cl. 294—103)

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This invention relates to a grappling unit, and more particularly to such unit for grappling pipes, rods and the like.

An object of the present invention is to provide a grappling unit which is readily applied to the object to be grasped, and which is self locking.

Another object of the present invention is to provide a grappling unit which is capable of tenaciously gripping an object of circular cross section.

A further object of the present invention is to provide a grappling unit which is simple in structure, and highly efficient in action.

Other and further objects of the present invention will become apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a side elevational view of the self locking grappling unit of the present invention in closed position and embracingly engaging a pipe.

Figure 2 is an end elevational view taken from the right-hand side of the assembly of Figure 1.

Figure 3 is a top plan view of the assembly of Figure 1.

Figure 4 is a sectional view taken on the line 4—4 of Figure 2.

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

Referring to the drawings, the numeral 10 designates a first half crescent shaped open ended housing, the housing including a top wall 11, a bottom wall 12, and spaced side walls 13, 13' connecting the top and bottom walls 11 and 12. The bottom wall 12 extends inwardly from one of the open ends of the housing 10 and terminates at a point spaced from the other of the open ends of the housing 10 and forms a shoulder 14. The top wall 11 has an outwardly dished portion 15 which extends inwardly from the other open end of the housing 10 and terminates adjacent the mid-point of the top wall 11. The side walls 13, 13' of the housing 10 are formed with opposed arcuate slots 16, 16', which are below and spaced from the dished portion 15 and are adjacent the other open end of the housing 10. A stub shaft 17 extends transversely through and is supported in the slots 16, 16', for limited longitudinal movement, the portion of the shaft 17 intermediate the side walls 13, 13', carrying a roller 18. Positioned exteriorly of the top wall 11 and pivotally connected to the housing 10 intermediate its open ends is a pull loop 19. As shown in Figures 4 and 5, an upstanding lug ex-

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tends through an aperture 21 formed in the dished portion 15 of the top wall 11 of the housing 10 and has on its lower end a sleeve 22 which is supported on a pin 23 extending transversely through the side walls 13, 13', contiguous to and spaced from the aperture 21. The upper end of the lug 20 is exteriorly of the dished portion 15 of the top wall 11 of the housing 10 and is provided with a hole 24 in which is pivotally supported the pull loop 19.

A second half crescent shaped open ended housing 25 including a top wall 26 and a bottom wall 27 is positioned interlockingly within and is rollably supported in the housing 10 and forms with the housing 10 a grapple, one of the open ends of the housing 25 being within and adjacent to the one open end of the housing 10 and the other of the open ends being exteriorly of the other open end of the housing 10. A second rotatable roller 28 is arranged transversely of and within the housing 25 adjacent the one end of the latter housing and has a portion projecting below the bottom wall of the housing 25. It is to be noted that the roller 18 rollably engages the top wall of the housing 25, while the roller 28 rollably engages the bottom wall 12 of the housing 10.

Projecting from the exterior surface portion of the bottom wall 27 of the housing 25 adjacent the upper open end of the latter housing is an abutment strip 29 which is engageable with the shoulder 14 and limits the movement of the housing 25 relative to the housing 10. A handle 30 projects exteriorly of the top wall 26 of the housing 25 adjacent the other open end of the latter housing and serves as a means for moving the housing 25 relative to the housing 10.

In operation of the grappling unit of the present invention, the operator grasps the handle 30 and exerts a force upon the handle in the direction to cause the housing 25 to be moved within the housing 10 until the abutment strip 29 engages the shoulder 14. While holding the unit in this position it is placed upon the top portion of a pipe A, whereupon the handle is released. The release of the handle 30 causes the housing 25 to be moved by gravity out of the housing 10 and automatically assume a self-locking position about the pipe A. The roller 18 by virtue of the mounting of its shaft 17 in the slots 16, 16' in the housing 10 wedgingly bears against the top wall of the housing 25, causing the portion of the housing 25 beyond the shoulder 14 of the housing 10 to be pressed downwardly toward the pipe A and the abutment strip 29 into frictional

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engagement with the adjacent portion of the pipe. The roller 18 is held in wedging engagement with the housing 25 by means of the force directed from the load upon the inner wall of the housing 25 tending to rotate the housing 25 counterclockwise about the roller 28 as a pivot and thereby hold the pin 17 in frictional engagement with the upper portions of the slots 16, 16'. At this point, an upwardly directed force is applied to the loop 19, resulting in the bottom wall 12 of the housing 10 and the abutment strip 29 on the bottom wall of the housing 25 to tenaciously seize and embracingly grip the portion of the pipe A therebetween, enabling the pipe to be lifted and conveyed to any desired point or location.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A grappling unit comprising a first half crescent shaped open ended housing including a top wall and a bottom wall extending inwardly from one of the open ends and terminating at a point spaced from the other of the open ends and forming a shoulder, a second half crescent shaped open ended housing including a top wall and a bottom wall positioned interlockingly within and connected to said first housing for limited longitudinal sliding movement and forming with said first housing a grapple, one of the open ends of said second housing being within and adjacent to said one open end of said first housing and the other of the open ends being exteriorly of said other open end of said first housing, an abutment strip projecting from the exterior surface portion of the bottom wall of said second housing adjacent said other open end of the latter housing and engageable with said shoulder for limiting the movement of said second housing relative to said first housing, and a pull loop exteriorly of the top wall of said first housing and pivotally connected to the last named housing intermediate its open ends.

2. A grappling unit comprising a first half crescent shaped open ended housing including a top wall and a bottom wall extending inwardly from one of the open ends and terminating at a point spaced from the other of the open ends and forming a shoulder, a rotatable roller arranged transversely of and within said housing between the top and bottom walls of the latter intermediate said shoulder and the other open end of said housing and connected to said housing for limited longitudinal sliding movement, a second half crescent shaped open ended housing including a top wall and a bottom wall positioned interlockingly within and movably supported in said first housing and forming with said first housing a grapple, one of the open ends of said second housing being within and adjacent to said one open end of said first housing and the other of the open ends being exteriorly of said other open end of said first housing, a second rotatable roller arranged transversely of and within said second housing adjacent the said one open end of the latter housing and having a portion projecting below the bottom wall of said second housing, said first roller rollably engaging the top wall of said second housing and said second roller rollably engaging the bottom wall of said first housing, an abutment strip projecting from the exterior surface portion of the bottom wall of said second housing adjacent said other open end of the latter housing and engageable with said shoulder for limiting the movement of said second

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housing relative to said first housing, and a pull loop exteriorly of the top wall of said first housing and pivotally connected to the last named housing intermediate its open ends.

3. A grappling unit comprising a first half crescent shaped open ended housing including a top wall and a bottom wall extending inwardly from one of the open ends and terminating at a point spaced from the other of the open ends and forming a shoulder, a rotatable roller arranged transversely of and within said housing between the top and bottom walls of the latter intermediate said shoulder and the other open end of said housing and connected to said housing for limited longitudinal sliding movement, a second half crescent shaped open ended housing including a top wall and a bottom wall positioned interlockingly within and movably supported in said first housing and forming with said first housing a grapple, one of the open ends of said second housing being within and adjacent to said one open end of said first housing and the other of the open ends being exteriorly of the said other open end of said first housing, a second rotatable roller arranged transversely of and within said second housing adjacent to said one open end of the latter housing and having a portion projecting below the bottom wall of said second housing, said first roller rollably engaging the top wall of said second housing and said second roller rollably engaging the bottom wall of said first housing, an abutment strip projecting from the exterior surface portion of the bottom wall of said second housing adjacent said other open end of the latter housing and engageable with said shoulder for limiting the movement of said second housing relative to said first housing, a handle projecting exteriorly of the top wall of said second housing adjacent said other open end thereof for moving said second housing relative to said first housing, and a pull loop exteriorly of the top wall of said first housing and pivotally connected to the last named housing intermediate its open ends.

4. A grappling unit comprising a first half crescent shaped open ended housing including a top wall, a bottom wall, and spaced side walls connecting the top and bottom walls, said bottom wall extending inwardly from one of the open ends and terminating at a point spaced from the other of the open ends and forming a shoulder, there being opposed arcuate slots formed in the side walls of said first housing below and spaced from the top wall adjacent said other open end of the latter housing, a rotatable roller arranged transversely of and within said housing between the top and bottom walls of the latter intermediate said shoulder and the other open end of said housing and connected to opposed slots of said housing for limited longitudinal sliding movement, a second half crescent shaped open ended housing including a top wall and a bottom wall positioned interlockingly within and movably supported in said first housing and forming with said first housing a grapple, one of the open ends of said second housing being within and adjacent to said one open end of said first housing and the other of the open ends being exteriorly of said other open end of said first housing, a second rotatable roller arranged transversely of and within said second housing adjacent to said one open end of the latter housing and having a portion projecting below the bottom wall of said second housing, said first roller rollably engaging the top wall of said second

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housing and said second roller rollably engaging the bottom wall of said first housing, an abutment strip projecting from the exterior surface of the portion of the bottom wall of said second housing adjacent said other open end of the latter housing engageable with said shoulder for limiting the movement of said second housing relative to said first housing, a handle projecting exteriorly of the top wall of said second housing adjacent said other open end thereof for moving said second housing relative to said first housing, and a pull loop exteriorly of the top wall of said first housing and pivotally connected to the last named housing intermediate its open ends.

5. A grappling unit comprising a first half crescent shaped open ended housing including a top wall and a bottom wall extending inwardly from one of the open ends and terminating at a point spaced from the other of the open ends and forming a shoulder, a second half crescent shaped open ended housing including a top wall and a bottom wall positioned interlockingly within and movably supported in said first housing and forming with said first housing a grapple, one of the open ends of said second housing being within and adjacent to said one open end of said first housing and the other of the open ends being exteriorly of said other open end of said first housing, a rotatable roller arranged transversely of and

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within and carried by said first housing intermediate said shoulder and the other open end of the last named housing and rollably engaging the bottom wall of said second housing, a second rotatable roller arranged transversely of and within and carried by said second housing and having a portion projecting below the bottom wall of said second housing and rollably engaging the bottom wall of said first housing, an abutment strip projecting from the exterior surface portion of the bottom wall of said second housing adjacent said other open end of the latter housing and engageable with said shoulder for limiting the movement of said second housing relative to said first housing, and a pull loop exteriorly of the top wall of said first housing and pivotally connected to the last named housing intermediate its open ends.

CHARLES W. KNAPP.

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