

No. 776,129.

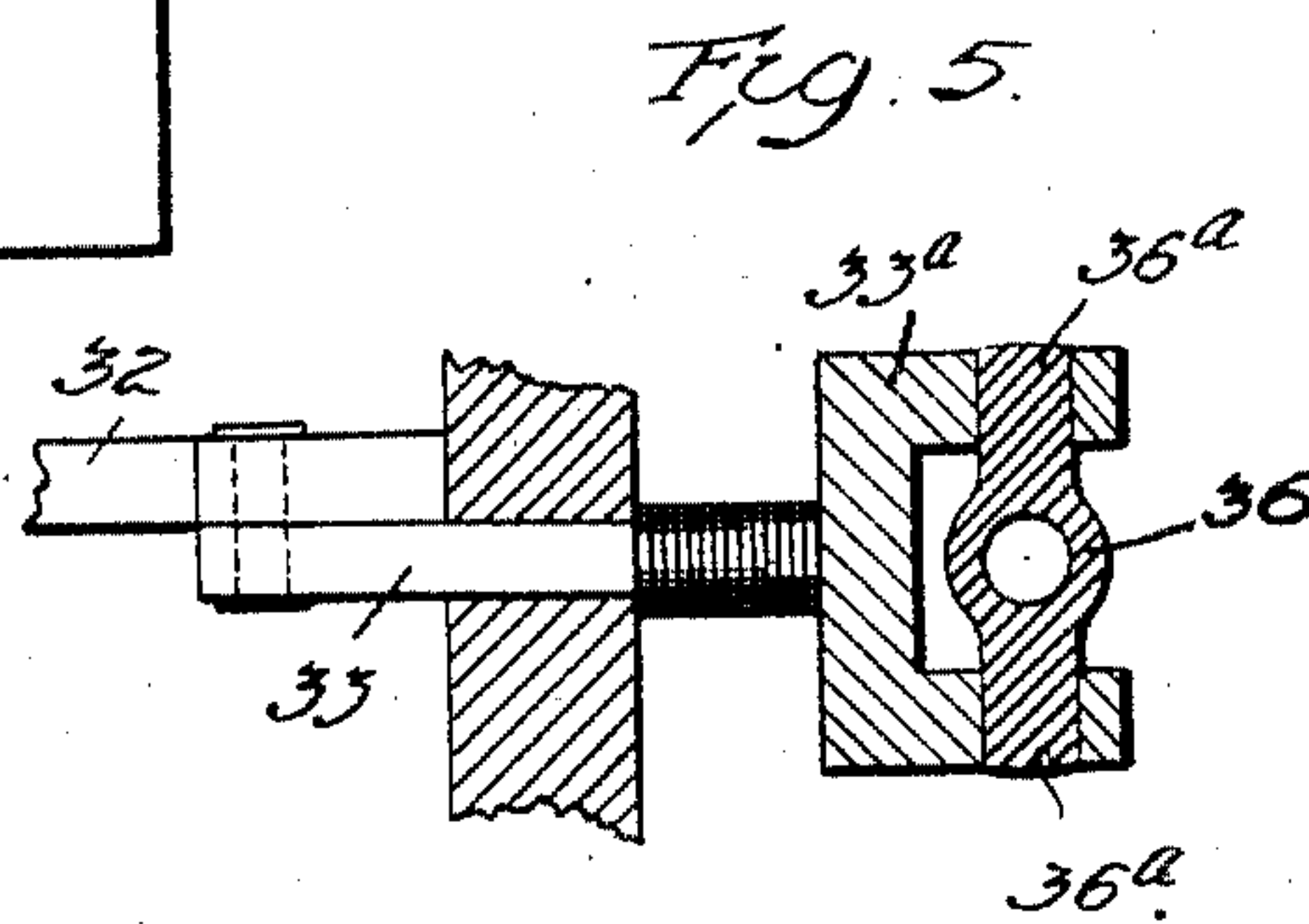
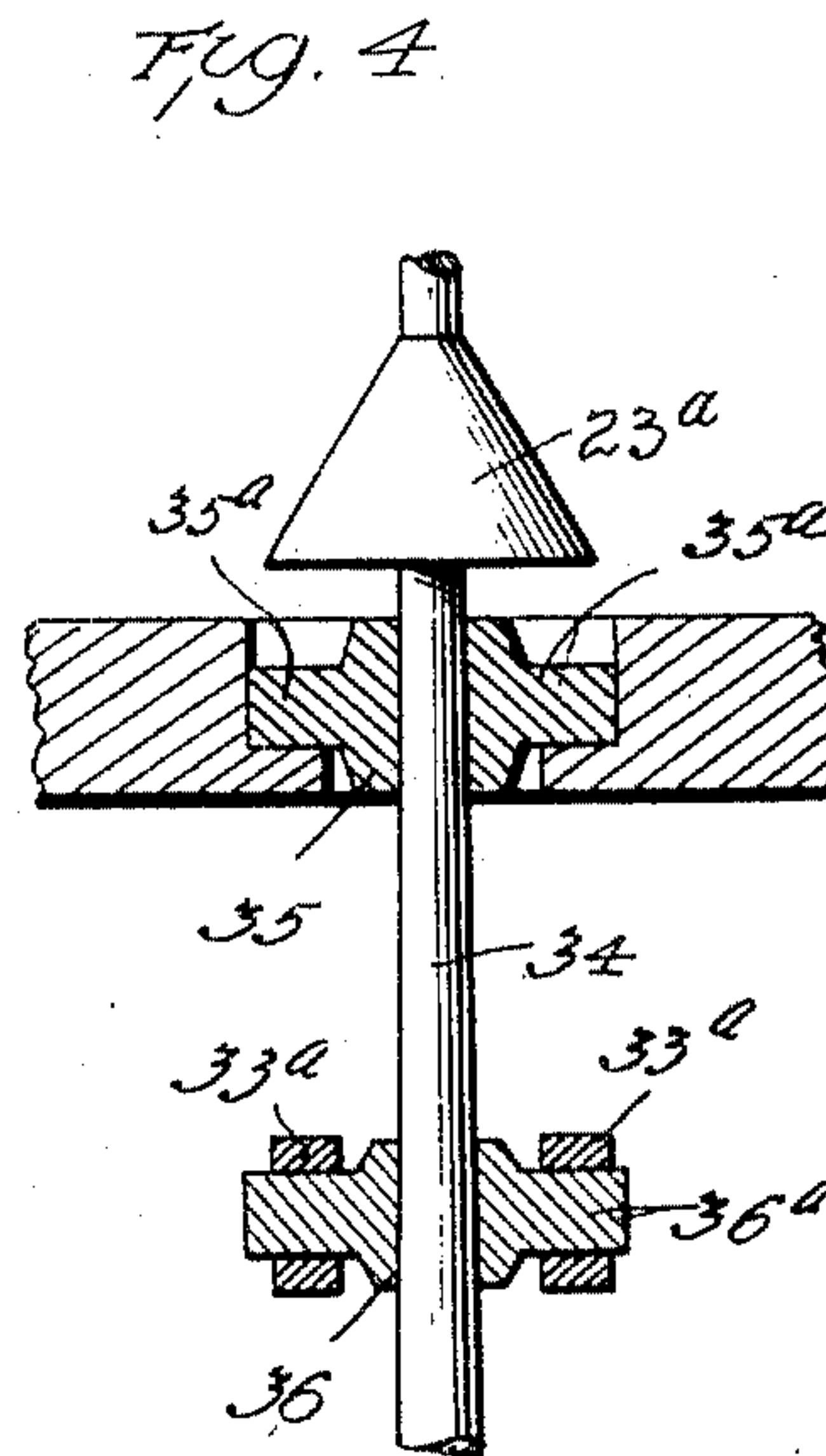
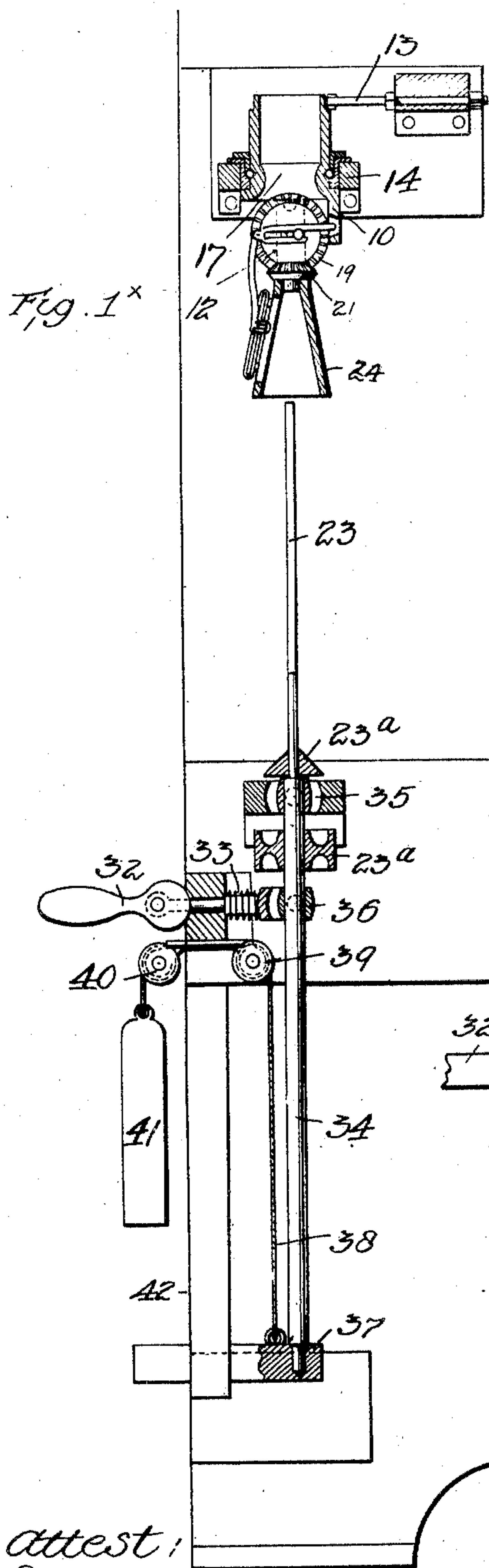
PATENTED NOV. 29, 1904.

A. J. & H. A. FOULDS.
MACHINE FOR SPINNING AND WINDING YARN.

APPLICATION FILED JUNE 9, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



attest:

Comrade
Edward Barton

Inventors
ALFRED J. FOULDS.
HENRY A. FOULDS.

by Spear, Macdleton, Coulson & Spear
attys.

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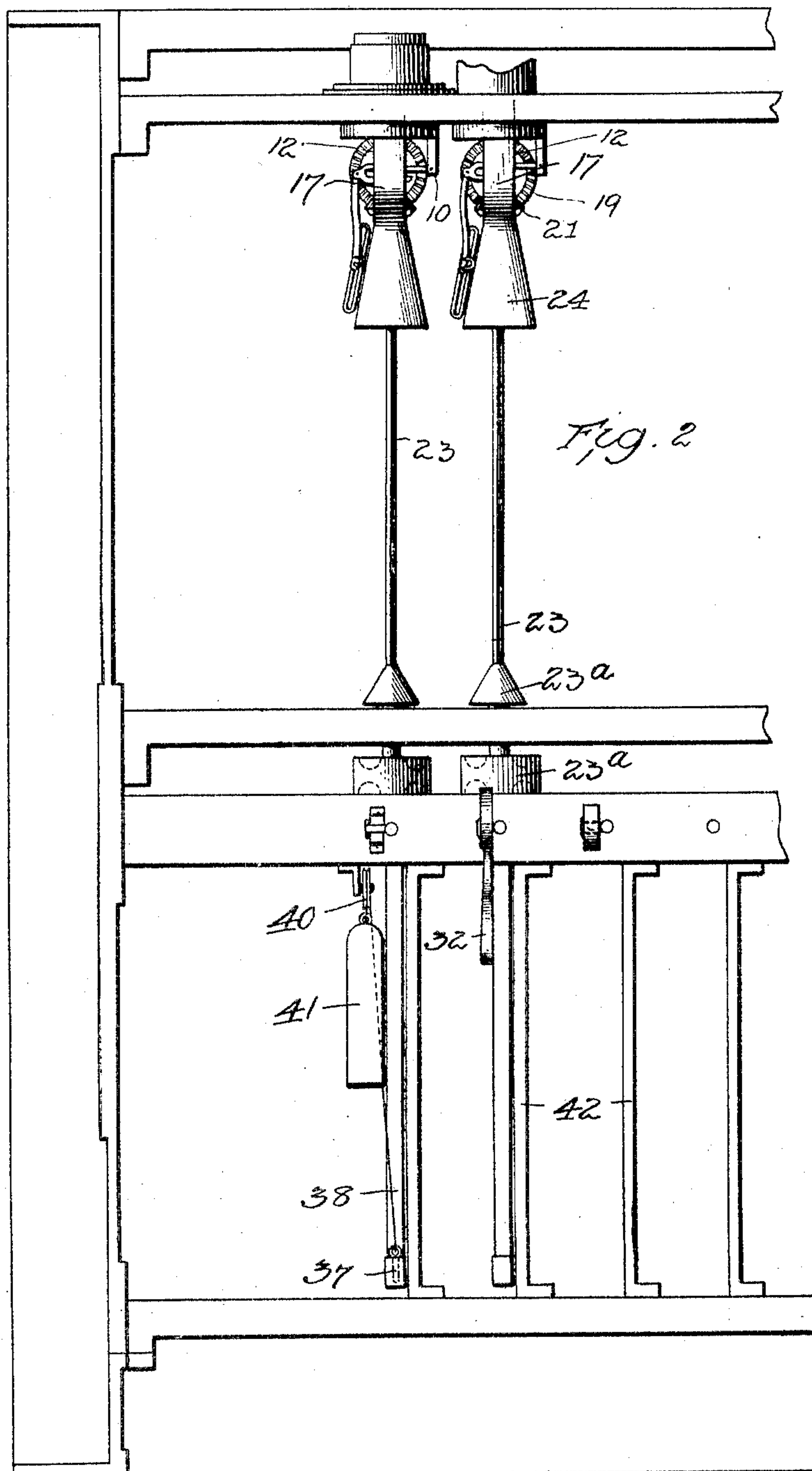
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3 SHEETS—SHEET 2.



Attest:
C. Middleton
Edward Sarton

Inventors
ALFRED J. FOULDS
HENRY A. FOULDS.
By Spear, Middleton, Donaldson & Spear
Attys.

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3 SHEETS—SHEET 3.

Fig. 3

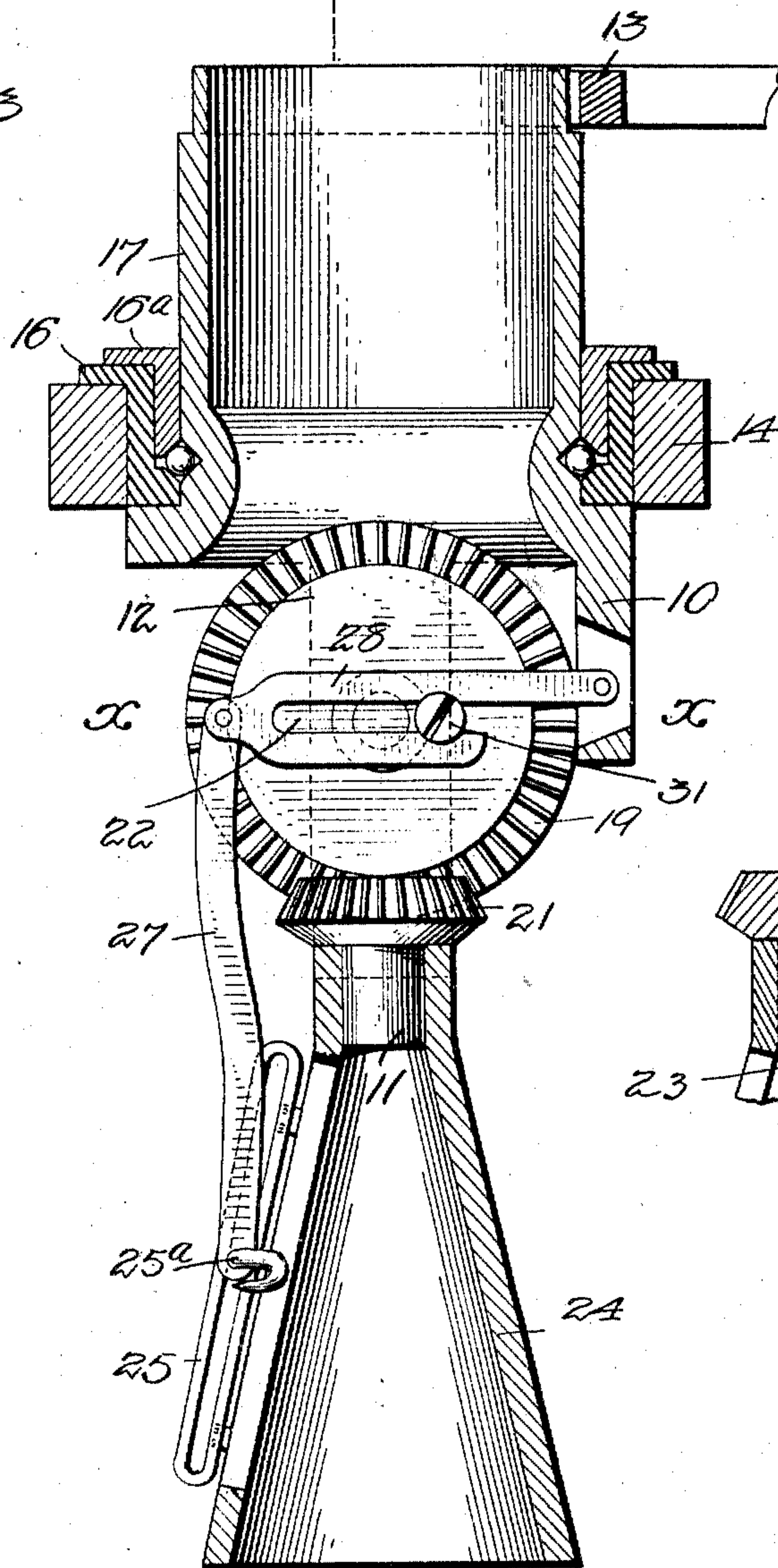
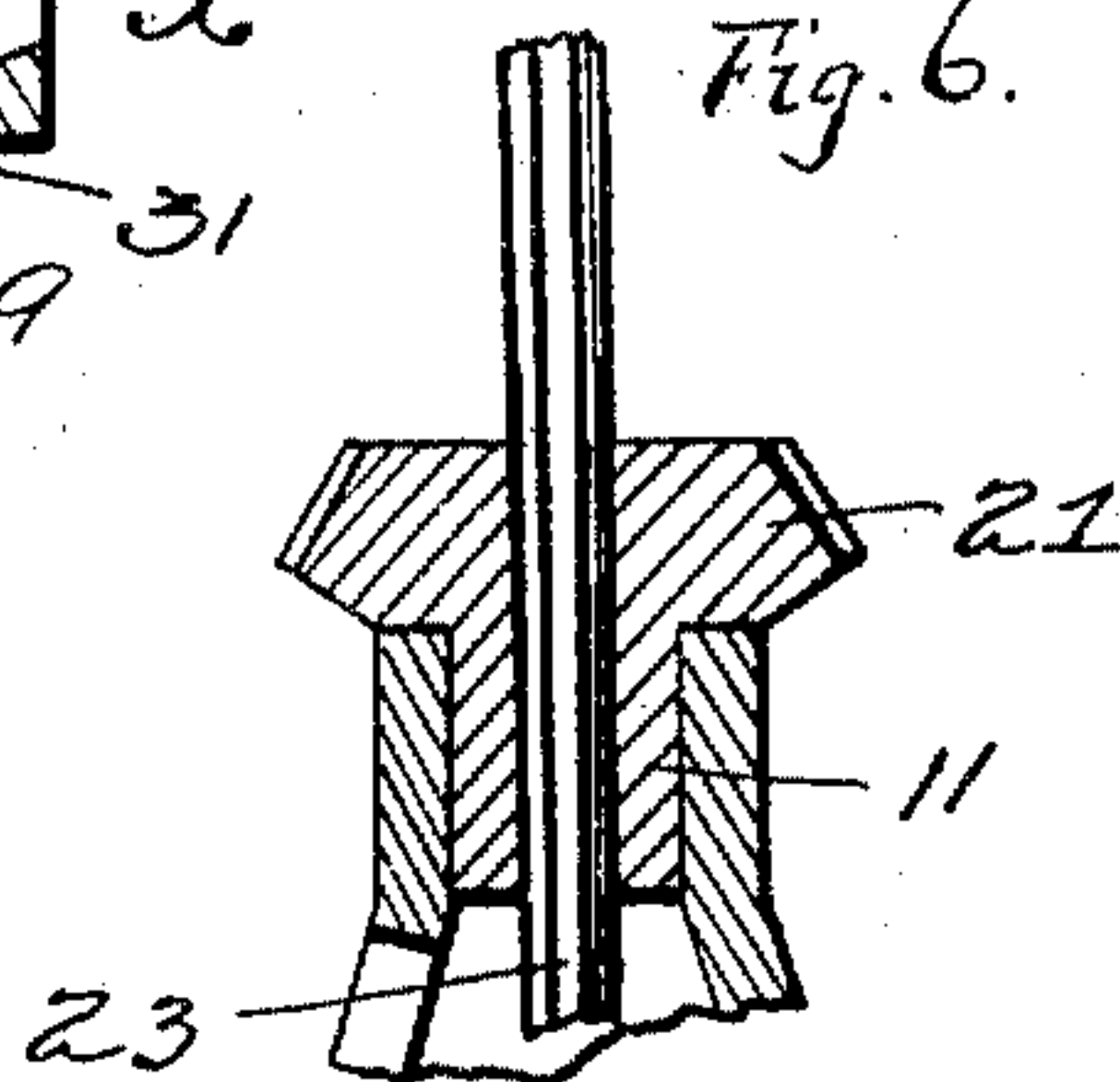


Fig. 6.



Attest:

Edward Sartow
Edward Sartow

Inventors
ALFRED J. FOULDS.
HENRY A. FOULDS.

By Spear, Maclester, Donaldson & Spear
ATTYS.

UNITED STATES PATENT OFFICE.

ALFRED J. FOULDS AND HENRY A. FOULDS, OF PHILADELPHIA,
PENNSYLVANIA.

MACHINE FOR SPINNING AND WINDING YARN.

SPECIFICATION forming part of Letters Patent No. 776,129, dated November 29, 1904.

Application filed June 9, 1904. Serial No. 211,878. (No model.)

To all whom it may concern:

Be it known that we, ALFRED J. FOULDS and HENRY A. FOULDS, citizens of the United States, residing at Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Machines for Spinning and Winding Yarn, of which the following is a specification.

Our invention relates to improvements in the type of machine which forms the subject of an application filed by us on the 4th day of February, 1904, Serial No. 192,006.

In devising the present construction we have aimed to simplify the device with a view to increased economy of production and efficiency of operation and durability in use and also to facilitate the removal of the cops from the spindles and to preserve the uniform density of the cops.

To this end the invention comprises the features of construction and arrangement of parts hereinafter described, and particularly pointed out in the appended claims.

We have illustrated the invention in the accompanying drawings, in which—

Figure 1 is a sectional elevation. Fig. 2 is a front elevation. Fig. 3 is an enlarged sectional view of the twisting-head and cop-builder, showing yarn-guide and operating-gears, which are omitted for convenience from Fig. 1. Figs. 4, 5, and 6 are sectional details.

Referring by reference characters to the figures, the numeral 17 designates the spinning section or shell, which is rotatably mounted in an opening in the frame 14. We prefer to provide an antifriction-bearing in which balls are provided traveling in an annular groove or ball-race in the shell and a corresponding race or bearing formed between the sleeves 16 and 16^a, as shown. The portion of the shell 17 above this bearing is adapted to carry the driving-belt, and thus serve as a pulley, and a sustaining-bracket is preferably provided bearing against the upper part of the shell, as indicated at 13, to counteract the pull of the belt. One or more arms 12 extend downward from the lower part of the shell and carry at the lower end the cone-shaped cop-builder 24, which is substantially the same as

shown in our aforesaid application. Within the upper end of the cone-builder is journaled a short shaft member 11, which has an angular socket to receive the spindle 23, which is of corresponding shape. This shaft member carries a small bevel-gear 21, which meshes with a vertically-disposed bevel-gear 19 of larger size, journaled in the depending arm or bracket 12. An arm or bracket 10 depends in proximity to one side of said vertical gear, and to this bracket is pivotally connected one end of an arm 28, which has a slotted portion 22, in which rests a pin 31, carried by the vertical bevel-gear 19. The free end of this arm 28 is connected to a link 27, which carries at its lower end the hook which guides the thread as it passes through the slot in the cone. In this form we use a guide 25, secured to the side of the cone and engaged by a pin 25^a, secured to the lower end of the arm 27.

The spindle 23 we mount so as to be capable of being moved vertically with relation to its driving-pulley 23^a through a suitable spline connection, and instead of forcing the cop down on the spindle, as in the construction described in our former application, we allow the spindle to be forced gradually downward as the building of the cop progresses, the cop being supported by a button or disk 23^a. Then when the cop is completed the spindle is further depressed until its upper end clears the lower end of the cop-builder, when by swinging the locking-handle 32 the rod 33 may be pushed in, swinging the shaft 34 inward and the upper end of the spindle 23 outward clear of the mouth of the cone, allowing the cop to be removed.

The shaft 34, which forms practically a continuation of the spindle, is journaled in suitable bearing 35, which has arms or trunnions 35^a mounted to rock or oscillate in the frame, as shown. The rod 33 has a forked portion 33^a, in the arms of which are journaled the trunnions 36^a of the bearing 36. A spring 33^b encircling the rod 33 tends to throw the shaft back when the cam-handle 32 is released.

In order to hold the spindles elevated, the lower end of each is stepped in a suitable

swinging block or bearing 37, to which is connected one end of a cord 38. From its point of attachment the cord passes upward over pulleys 39 and 40 and is then attached to a weight 41, which operates to normally hold the shaft and spindle elevated. The swinging blocks are guided by the upright frame members or guides 42 both in their vertical and swinging movement.

It will of course be understood that the spindle and twist head or section are driven at different rates of speed; but as the means for doing this, as well as the means for feeding the slubbing or roving, form no part of the present invention illustration and description thereof are deemed unnecessary.

Having thus described our invention, what we claim is—

1. In combination, a rotary twisting-section, a slotted cop-builder depending therefrom, a spindle movable vertically within the cop-builder, independent means for rotating said twisting-section and spindle whereby said parts may be rotated at different rates of speed, and a vertically-movable thread-guide controlled in its movement by the differential rotation of the spinning-section and spindle, substantially as described.

2. In combination, a rotary twisting-section, a slotted cop-builder carried thereby, a horizontally-disposed bevel-gear journaled at the upper end of said cop-builder, a vertically-disposed gear meshing therewith, a vertically-movable thread-guide having operating connections with said vertically-disposed bevel-gear, and a vertically-movable rotatable spindle projecting up within the cop-builder, and having a sliding and non-rotatable connection with said horizontal bevel-gear, substantially as described.

3. In combination, a rotary twisting-section, and a slotted cop-builder carried thereby, a rotary spindle with independent driving means whereby it may be driven in the same direction but at a different rate of speed, a movable thread-guide adjacent to said cop-builder controlled in its movement by the difference in speed of rotation of said parts, means whereby said spindle may be moved downward to clear its upper end from the cop-

builder, and means for swinging said spindle out of its normal position to remove the cop, substantially as described.

4. In combination, a rotary twisting-section carrying a slotted cop-builder, a bevel-gear carried at the upper end of said cop-builder, a bevel-gear meshing therewith, a movable thread-guide having operating connections with said second bevel-gear, a rotary and swinging spindle-operating shaft arranged axially in line with said cop-builder and a spindle having a sliding and non-rotatable connection with said shaft and constructed and adapted to engage said first-named bevel-gear with a sliding and non-rotatable connection, substantially as described.

5. In combination, a rotary twisting-section carrying a slotted cop-builder, a bevel-gear carried at the upper end of said cop-builder, a bevel-gear meshing therewith, a movable thread-guide having operating connections with said second bevel-gear, a rotary and swinging spindle-operating shaft arranged axially in line with said cop-builder and a spindle of angular cross-section engaging an angular opening in said first-named gear and carried by said spindle-operating shaft, substantially as described.

6. In combination, a rotary twisting-section carrying a slotted cop-builder, a bevel-gear carried at the upper end of said cop-builder, a bevel-gear meshing therewith, a movable thread-guide having operating connections with said second bevel-gear, a shaft journaled at its upper end in a swinging bearing, a spindle carried by said shaft adapted to engage said first-named bevel-gear with a slidable and non-rotatable connection, a hand-operated device having a sliding and pivotal connection with said shaft for rocking the same, and yielding means for holding said shaft normally elevated, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

ALFRED J. FOULDS.

HENRY A. FOULDS.

Witnesses:

JOHN THIEL,

JOHN J. FOULKROD, Jr.