

No. 667,927.

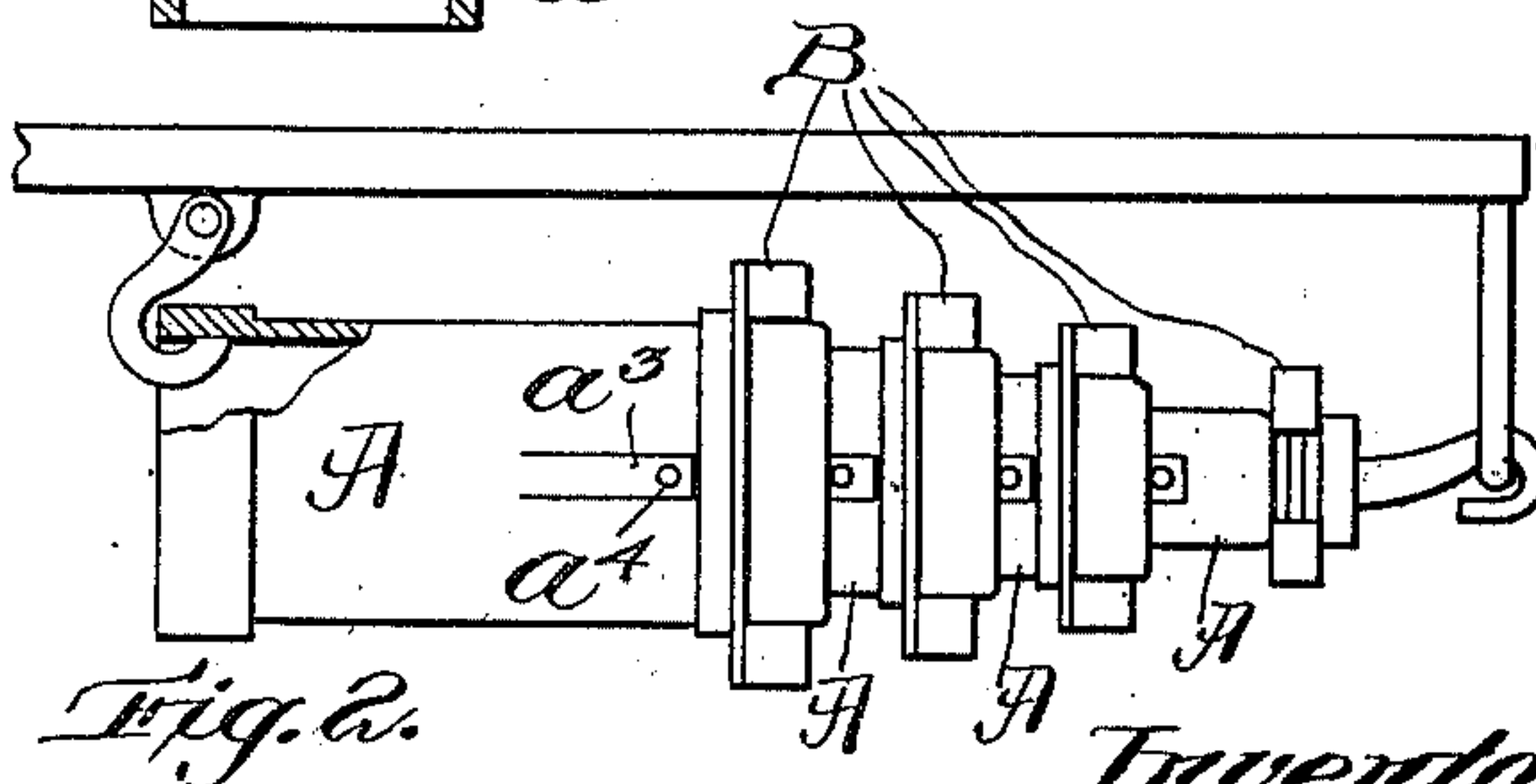
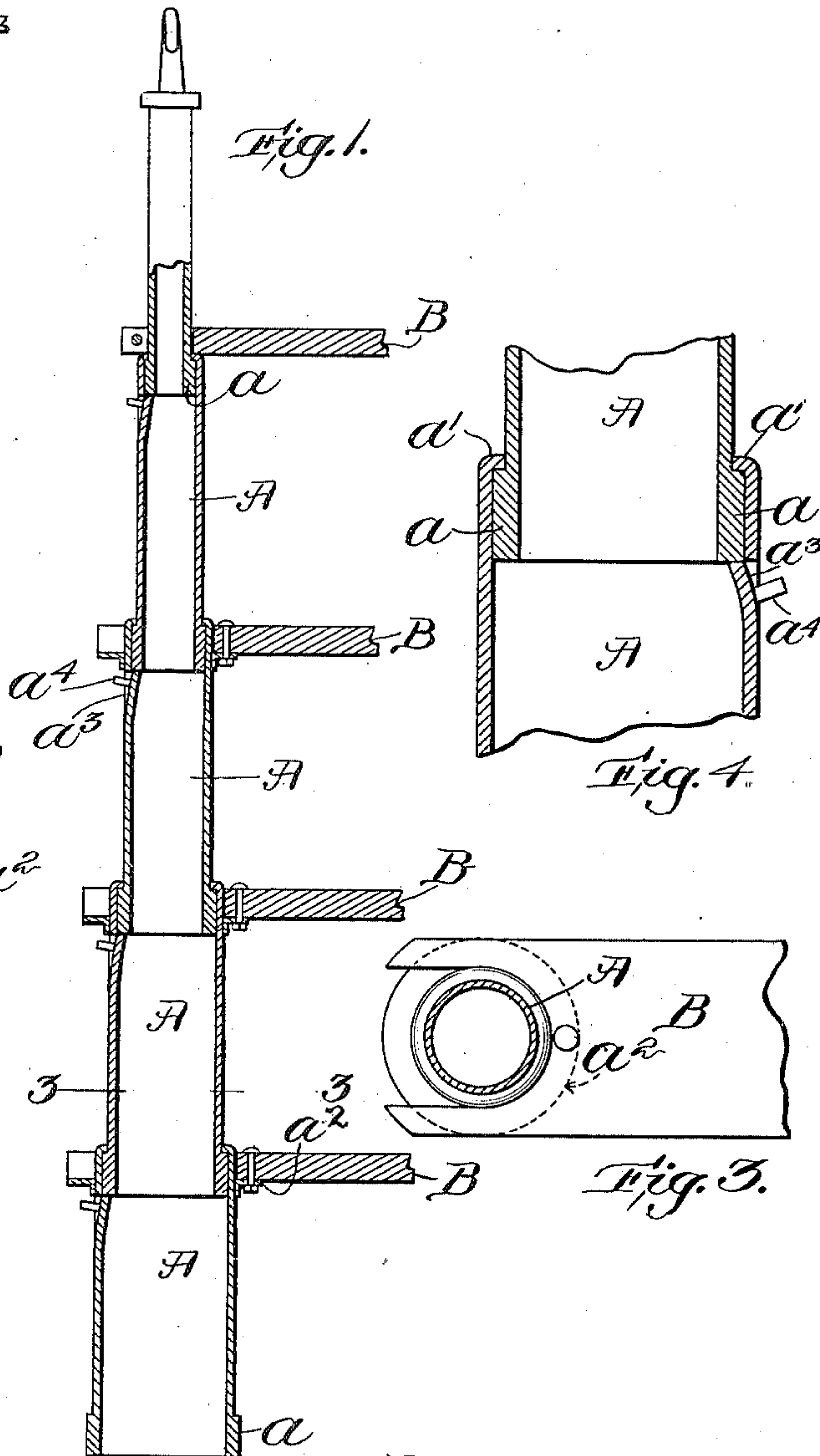
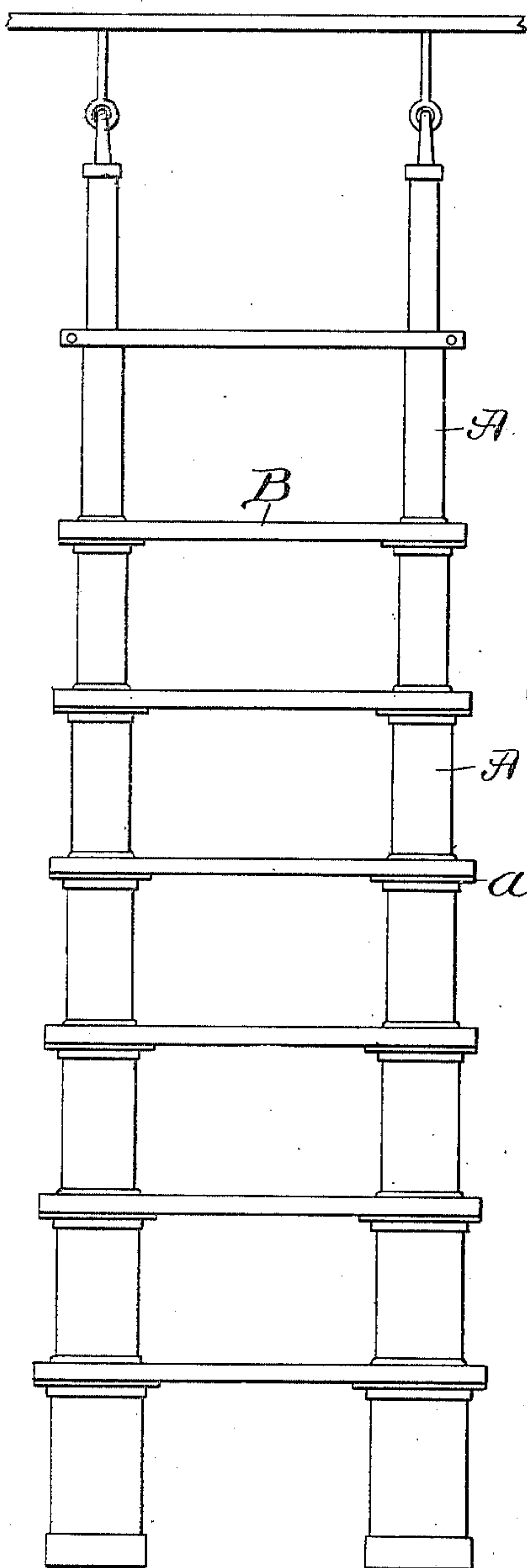
Patented Feb. 12, 1901.

P. WEEKS.

LADDER.

(Application filed Dec. 17, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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LADDER.

SPECIFICATION forming part of Letters Patent No. 667,927, dated February 12, 1901.

Application filed December 17, 1900. Serial No. 40,101. (No model.)

To all whom it may concern.

Be it known that I, PAUL WEEKS, of Lincoln, in the county of Lancaster and State of Nebraska, have invented an Improved Ladder, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section of extended sections of a ladder. Fig. 2 shows the ladder closed and hinged below a shelf. Fig. 3 shows a section on line 3 3 of Fig. 1. Fig. 4 shows a detail of the spring locking device.

My invention is a telescoping ladder composed of a multiplicity of short cylinders progressively varying in interior and exterior diameters, one cylinder being arranged within the other and suitable stops being interposed between the exterior end of one cylinder and interior end of another cylinder to prevent the two sections from becoming disengaged when drawn out to full length.

I am aware that it has been heretofore practiced to unite a number of short ladders together by sliding connections in such a fashion that one ladder could while remaining in engagement with its neighbor be slid along and held in position, so that the short ladders form, in effect, one ladder capable of being extended to form a longer ladder; but my ladder differs from these ladders in the prior art in the fact that it is a truly telescoping ladder composed of a multiplicity of short sections, each one being hollow and adapted to receive within its hollow another section of smaller diameter and each one in its turn adapted to be received in another section of larger diameter. The rungs are so mounted upon these sections as not to interfere with the closing or telescoping of the ladder, and as a practical matter the length of each section should not exceed the length suitable between one rung and another in a ladder. The result of this construction is a ladder which may be folded practically in a little more than the length of one section, each successive rung being brought into juxtaposition with the neighboring rungs above and below it.

In the drawings I have shown a ladder of

several sections, each section A consisting of a tube of any suitable material, but preferably of drawn metal. Upon the outer surface of one end of this section A is secured an annulus a , forming a stop, and at the other end of each section A the tube is drawn in, forming an interior stop a' . Mounted upon the outside of the section A at its upper end is a flange a^2 (see Figs. 1 and 3) for a purpose hereinafter to be explained. The rung or step B is formed as shown in Figs. 1 and 3 and is preferably seated upon the flange a^2 , to which it may be secured, if desired, by a bolt. The rung B may, however, be rested, as shown at the top of Fig. 1, directly upon the upper end of section A. This ladder may be used as an ordinary ladder is used by extending it to its full length and resting the lower end upon the floor, while the upper end is placed against the wall. When so used, a spring-catch, as a^3 , or its equivalent is essential in order to keep the sides of the ladder extended. My ladder, however, may be very effectively used in some instances by being suspended by its upper end, and in that case the spring-bolt or its equivalent is not necessary.

The catch a^3 , to which I have above alluded, is illustrated in Fig. 4, and in the simple form in which I have shown it consists merely of a small leaf or finger punched from and integral with tube A and is so tempered and bent that it tends constantly to press toward the interior of the tube. A knob or handle a^4 is attached to this spring a^3 in order that the spring may be controlled by the operator.

The operation of my device is as follows: Assuming that the ladder is closed, the operator by holding the ladder up by the small end and pressing upon that rung farthest away from the small end will cause the telescoped tubes to slide out and be extended. In doing this each annulus a is drawn upward toward the top of the tube in which it is sliding, and in passing upward it presses back the spring a^3 until it has passed beyond that spring, which then resumes its normal position, the upper end of spring a^3 being beneath one edge of stop a , and this operation is performed in each section of the ladder, so

that the ladder is by these springs a^3 locked in open position. To close it, the operator must pull each spring a^3 out of engagement with stop a , using the handle or knob a^4 to effect this object, and, disengagement of the sections being effected in this way, the ladder is pushed together or telescoped, as will be obvious.

When it is desired to use my ladder, as is suggested, by suspending it by the upper end thereof, (see Fig. 2,) the spring-catch a^3 is then unnecessary and may be dispensed with advantageously. When the ladder is suspended, as shown in Fig. 2, it is merely necessary to unhook the catch which holds the ladder beneath the shelf, allowing the ladder to swing down and out upon the hooked hinge near the front edge of the shelf, and thereupon by its own weight the ladder will extend itself until it reaches the floor. To close it, it is merely necessary to push one section into the other and return it to the position shown in Fig. 2.

I claim—

1. The ladder above described, made up of two sets of telescoping ladder-sections, each section having at each end a stop, one stop within the hollow of the section near one end of the section, and the other stop upon its exterior surface near the opposite end of the section, the said sections being in mutual engagement, each with one or two other sections, by means of the stops, and each section carrying one end of a rung; those rungs; a catch between each section and the other section with which it is in engagement, to keep the sections in their extended position; all organized and arranged substantially as shown, so that the two sets of telescoping sections, each set forming one side of a ladder, may be connected to and separated from the other set by the rungs and retained in an extended po-

sition, when drawn out, by means of the stops and catches.

2. The ladder above described, made up of two sets of telescoping ladder-sections, each set having at each end a stop, one stop within the hollow of the section near one end of the section, and the other stop upon its exterior surface near the opposite end of the section, the said sections being in mutual engagement each with one or two other sections, by means of the stops, and each section carrying one end of a rung; those rungs; all organized and arranged, substantially as shown, so that the two sets of telescoping sections, each set forming one side of a ladder, may be connected to and separated from the other set by the rungs, and the hollow sections retained in connection with each other by means of the stops.

3. The ladder above described, made up of two sets of telescoping ladder-sections, each section having at each end a stop, one stop within the hollow section near one end of the section, and the other upon its exterior surface near the opposite end of the section, said sections being in mutual engagement each with one or two other sections, by means of the stops, and each section carrying one end of a rung; those rungs, and means at one end of the ladder to suspend the ladder; all organized and arranged, substantially as shown, so that the two sets of telescoping sections, each set forming one side of a ladder, may be connected to and separated from the other set by the rungs, and the hollow sections retained in connection with each other by means of the stops.

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