

A. RICCI.
PORTABLE PNEUMATIC SHUTTLE THREADING IMPLEMENT.
APPLICATION FILED MAR. 4, 1910.

984,606.

Patented Feb. 21, 1911.

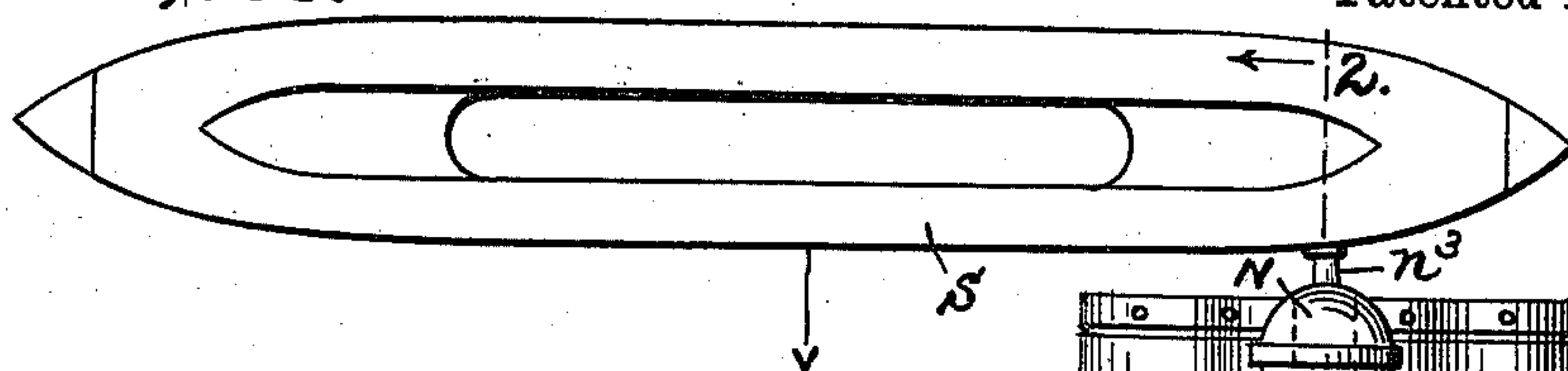


FIG. 1.

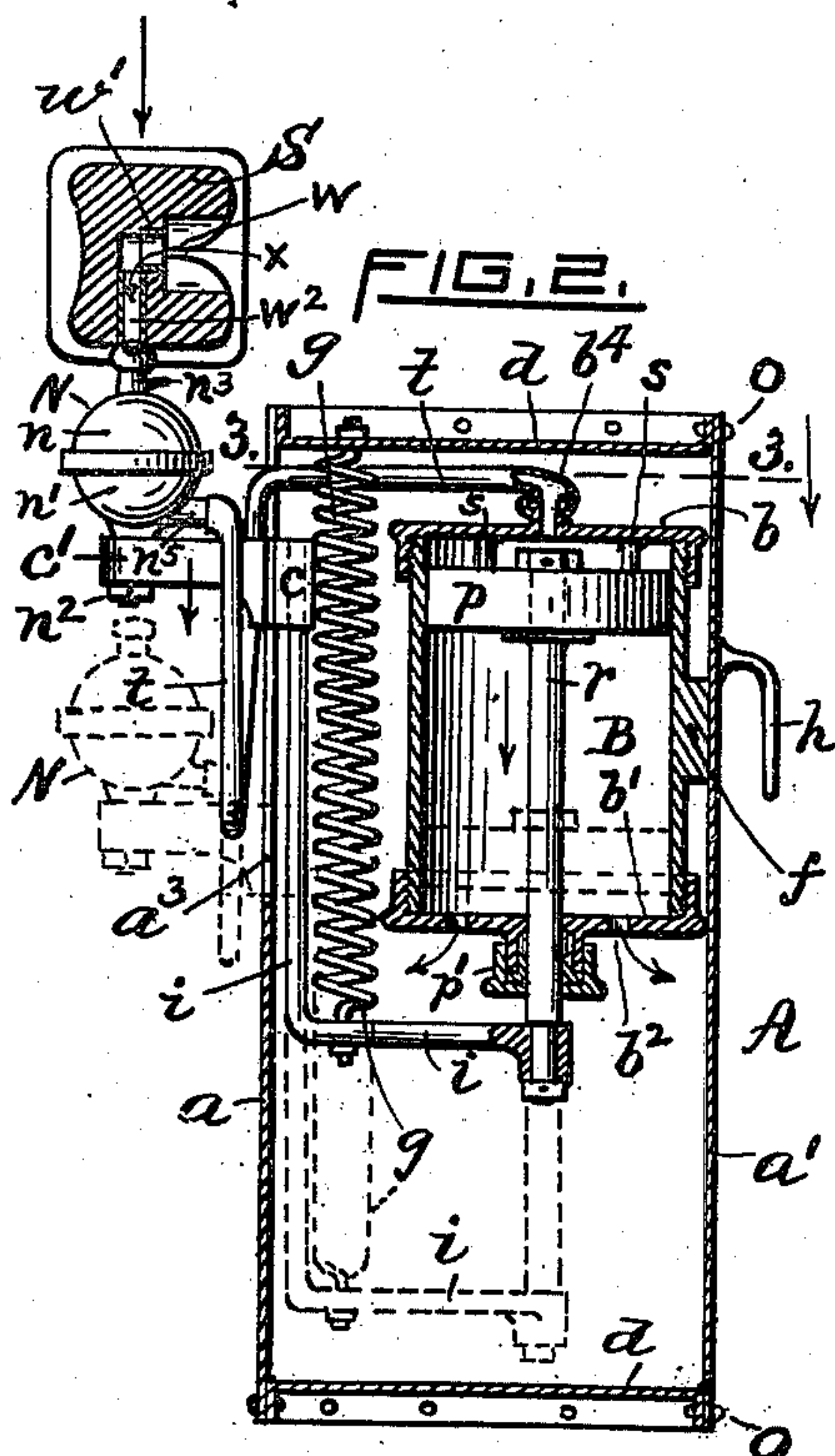
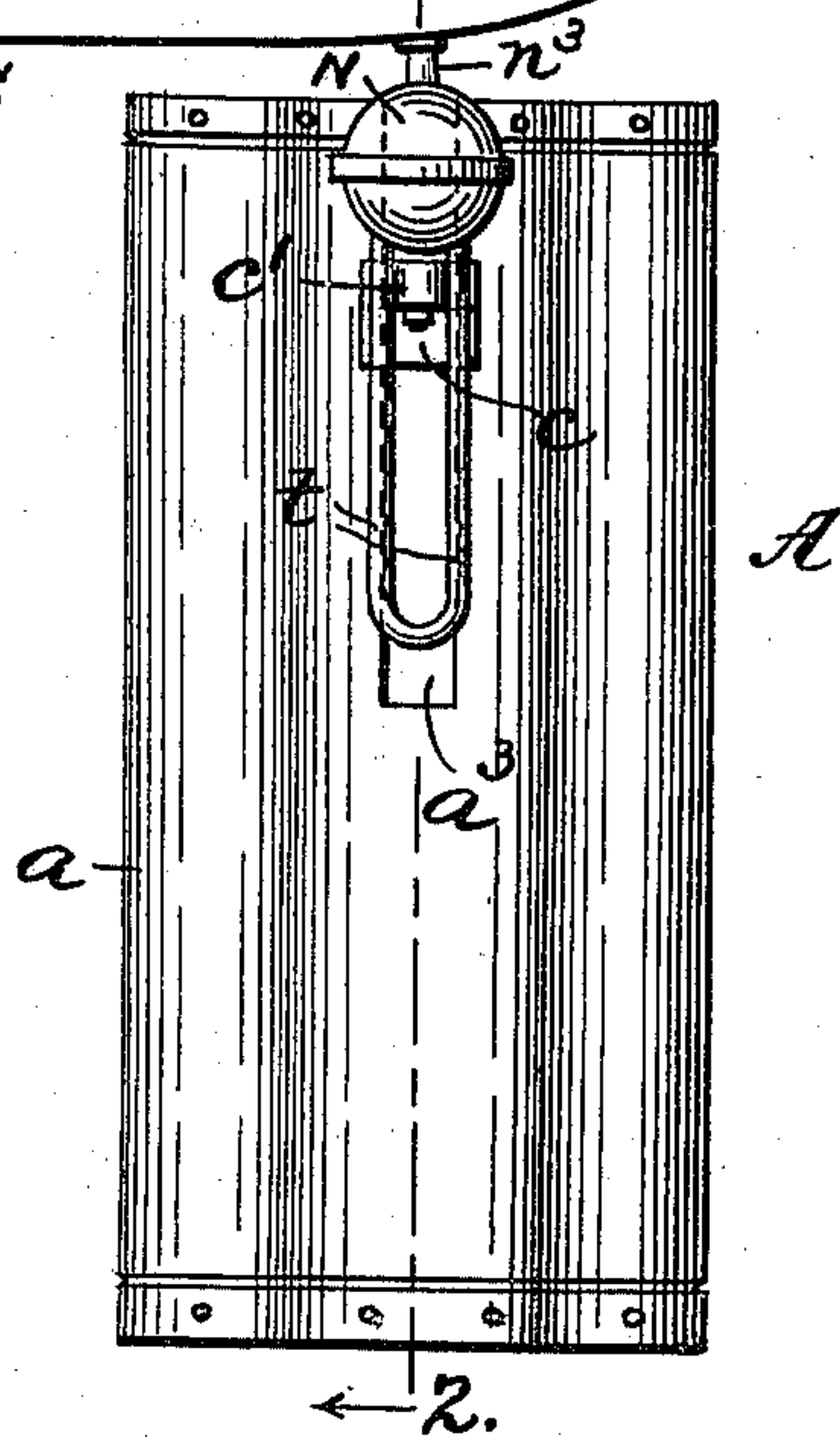


FIG. 2.

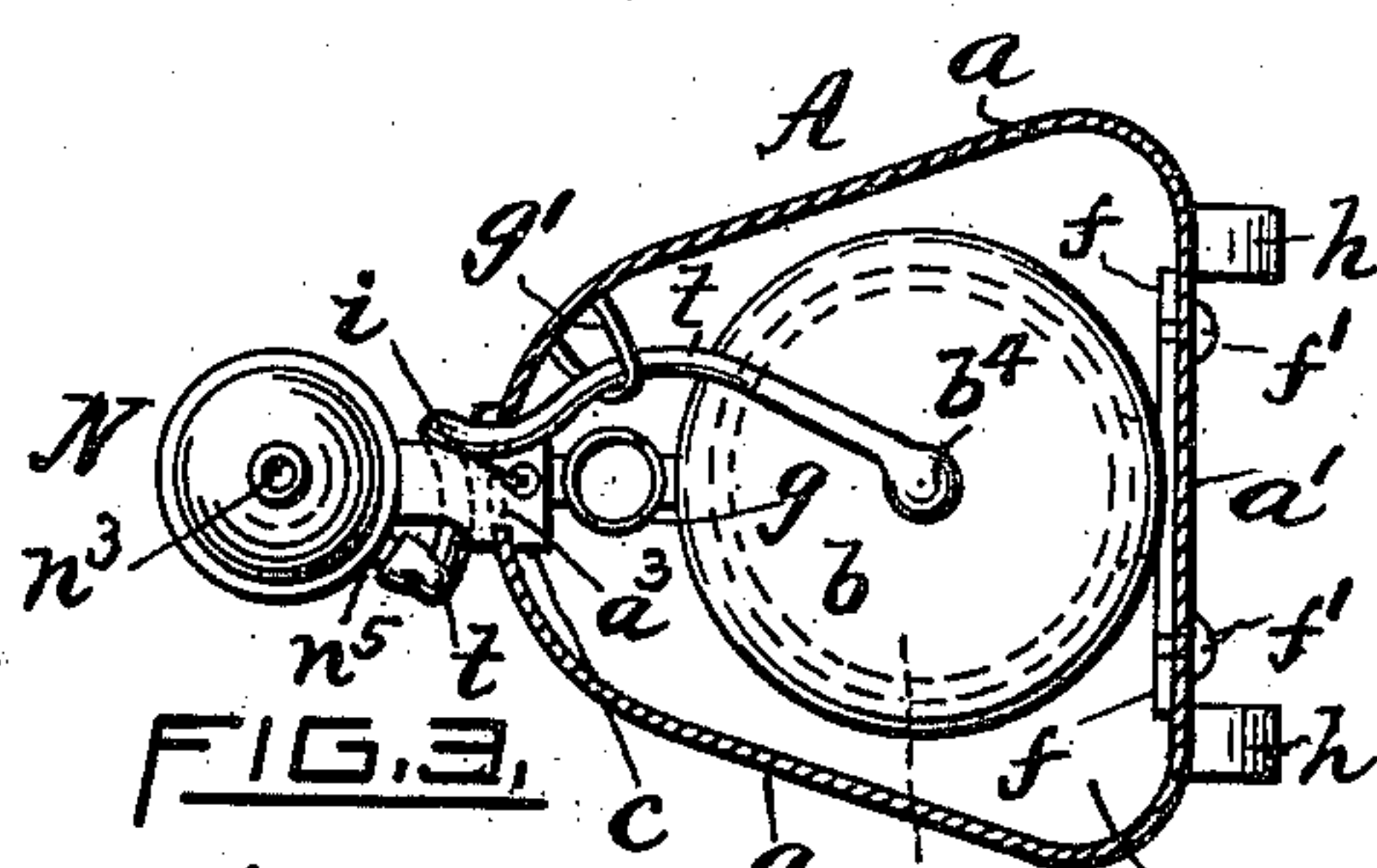


FIG. 3.

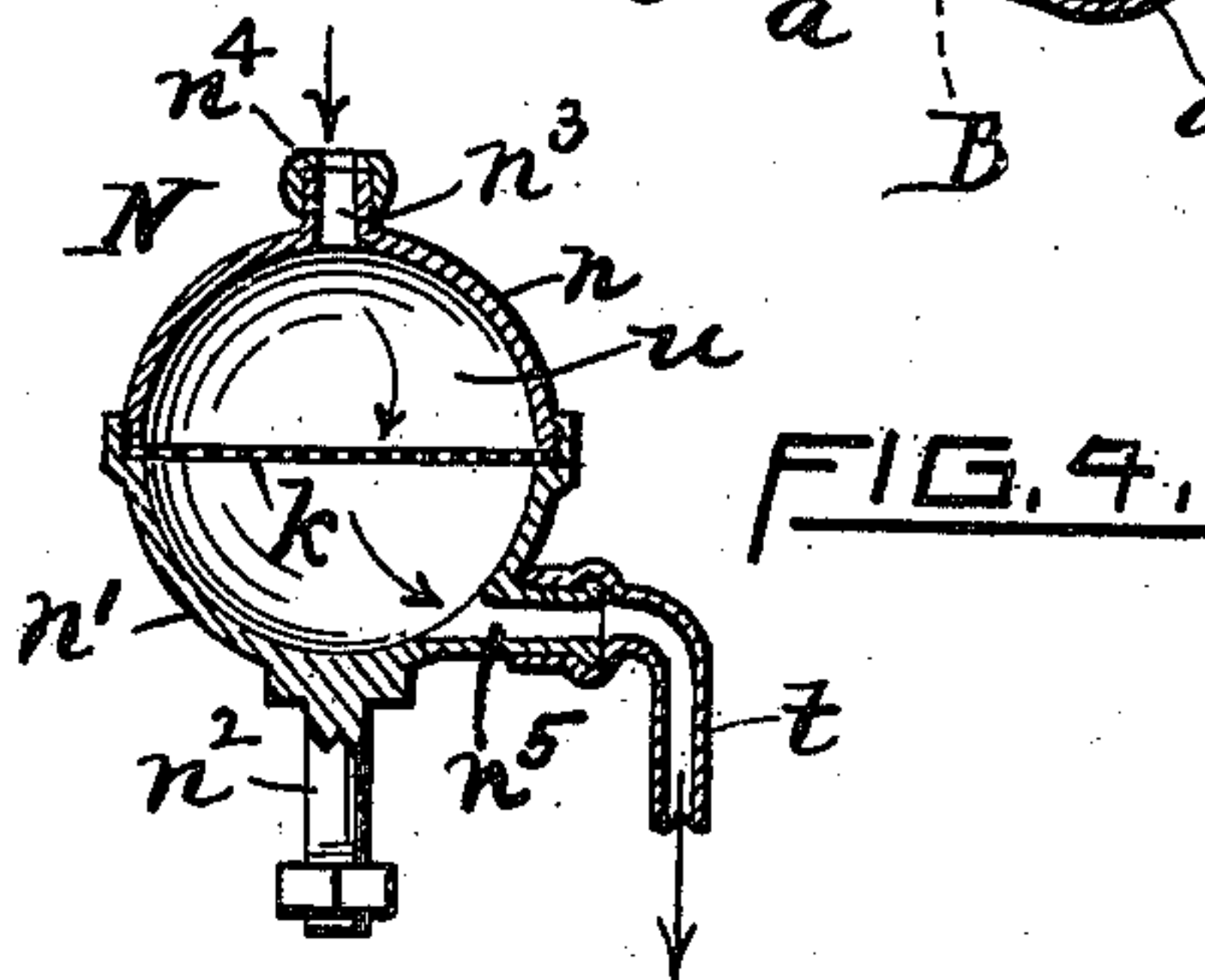


FIG. 4.

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PORTABLE PNEUMATIC SHUTTLE-THREADING IMPLEMENT.

984,606.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed March 4, 1910. Serial No. 547,182.

To all whom it may concern:

Be it known that I, ANGELO RICCI, a subject of the King of Italy, residing at Natick, in the county of Kent and State of Rhode Island, have invented certain new and useful Improvements in Portable Pneumatic Shuttle-Threading Implements, of which the following is a specification.

My invention relates to portable pneumatic loom-shuttle-threaders, and it consists in the novel features of construction hereinafter set forth and claimed.

The object I have in view is to produce a portable pneumatic shuttle-threading implement possessing a greater degree of efficiency than other articles of this class as heretofore devised. The instrument forming the subject of this invention is simple in construction, positive in action, not liable to become inoperative, is adapted to be readily taken apart for inspection or repair, is relatively small in size, and comparatively inexpensive to manufacture.

In the accompanying sheet of drawings, Figure 1 represents a front side elevation of my improved pneumatic shuttle-threading implement, showing a shuttle normally positioned thereon preparatory to the threading operation. Fig. 2 is a corresponding vertical sectional view, taken substantially through the line 2 2 of Fig. 1. Fig. 3 is a horizontal sectional view, taken on line 3 3 of Fig. 2, the shuttle being omitted; and Fig. 4 is an enlarged, detached, vertical sectional view taken through the center of the chambered shuttle-supporting head.

The following is a more detailed description of my improved portable pneumatic shuttle-threading implement A: As represented, the general form of the sheet-metal casing *a* cross-sectionally is substantially triangular and having well rounded corners or edges, as shown in Fig. 3. It is provided with removable cupped top and bottom closure members or ends *d*, secured in position by screws *o* or by other means. The back side wall *a*¹ of the casing or shell has one or more depending fixed hooks *h* whereby the device may be readily attached to a belt or strap or other suitable means worn by the weaver for holding and supporting the device. Within the casing *a* is mounted the inverted cylinder or air-exhausting member B, having top and bottom heads *b*, *b*¹, respectively, removably secured thereto. The cylinder is positioned near the top of the

casing and secured in place by means of bolts *f*¹ passing through the latter's rear wall and into lateral lugs or feet *f* integral with the cylinder. The upper head *b* has a central nozzle *b*⁴ open to the chamber above the piston *p*. The latter has a rod *r* secured thereto, the same extending downward through the lower head *b*¹ and being secured to a bent stiff connection *i*, in turn secured to the cross-head or block *c*, vertically slidable in the longitudinally slotted opening *a*³ formed in the front side of the casing. The piston-rod passes through a suitable combined guide and packing-box *p*¹ of the bottom head. If desired, the upper head may be provided with depending inner lugs *s*, adapted to serve as stops for limiting the upward stroke of the piston, all as clearly represented in Fig. 2. The cross-head *c* is provided with an outer or front arm *c*¹, adapted to carry the said shuttle-supporting hollow head N; the lower stem *n*² of the latter passing through the arm. As thus constructed, it is clear that upon pressing the cross-head *c* downward to its limit or bottom of the slot *a*³ (see dotted line position indicated in Fig. 2), resisted by the helically wound spring *g*, the several members, *p*, *r*, and *i*, will be correspondingly depressed. Upon removing the pressure, the said spring automatically returns the parts to the normal stationary position, shown by the full lines. The said chambered head N may have any suitable form; the drawings represent it as being spherical. It consists of the upper and lower hemispherical members *n*, *n*¹ adapted to be detachably secured together, and having a perforated, horizontal inner partition or screen *k* clamped between them, as shown most clearly in Fig. 4. The upper member *n* is provided with a small central inlet-nozzle *n*³, protected by an open rubber tip *n*⁴, constructed to register with the thread-tube or eye *w*² of the shuttle, and when in use serving as a packing to prevent leakage of air around its exterior. The lower half, *n*¹, of the sphere has a small lateral outlet-nozzle *n*⁵ in open communication with the lower part of the chamber. To this nozzle is attached one end of a flexible tube *t*, the other end after passing through the opening *a*³ of the casing *a* and above the cross-head, being attached to the upper nozzle *b*⁴ of the cylinder-head, thus forming an air-tight connection between the latter and the intake-nozzle *n*³. If desired,

a guide or eye g^1 may be employed for holding the tube in position, as represented in Fig. 3.

Shuttles, S, as usually made, are provided each with a swinging spindle on which the thread or yarn-cop is mounted. The delivery or free end of the thread leading from the cop is threaded through a guide-slot w , a transverse central porcelain eye w^1 , located contiguous to the bottom of the slot and the thread-tube or eye proper w^2 , disposed at an angle to and communicating with the eye w^1 and extending through the wall of the shuttle, all as indicated in Fig. 2.

The following is a description of the manner of operation of my improved portable pneumatic shuttle-threading instrument A: It is to be borne in mind that the device is conveniently attached, say to a belt worn by the weaver, thus leaving both hands free. The weaver first places the cop in the shuttle and positions the loose or free end portion of the thread contiguous to the shuttle-eye, in exactly the same manner as though the thread were to be sucked through the shuttle-eye by the weaver's mouth. The shuttle, while still held in the weaver's hand is next positioned upon and partly supported by the valveless implement A, the upper end of the air inlet-nozzle n^3 , n^4 then snugly registering and alining with the eye portion w^2 of the shuttle. See also Fig. 2. Now, upon quickly pressing the shuttle downwardly to its limit, or dotted line position, the element N, cross-head, piston, and flexible rubber connection t will produce a partial vacuum in the upper portion of the cylinder B, the result being to suck the free end portion of the thread, as indicated by arrow x in Fig. 2, downward through the shuttle-eye and into the nozzle n^3 ; the now threaded shuttle is then removed, thus completing the operation. The spring g immediately thereafter automatically returns the several movable members of the device back again to the original or normal position. Open holes b^2 , formed in the bottom head b^1 readily permit the flow of atmospheric air into and out of the chambered portion below the piston. It may be added that the end of the thread then extending through the shuttle-eye may be readily drawn out longer, if desired, and the shuttle inserted between the shedded warp-threads of the loom, as usual. It may be observed, too, that the presence of the screen k in the element N serves to prevent the entrance of lint and foreign matter into the air-tube t , thereby guarding the latter against clogging. In case of an accumulation of lint, &c., in the chamber portion u , the same can be readily removed by simply unscrewing the two members of the shell. I do not desire to limit my invention to the

exact construction and arrangement of the several parts as represented in the drawings, since slight changes or modifications may be made therein without affecting its efficiency and scope.

What I claim as my invention and desire to secure by United States Letters Patent is:—

1. As an improved article of manufacture, a portable, pneumatic loom-shuttle-threading implement, the same including in its construction a casing, an air-exhaust cylinder mounted therein, provided with an air-inlet opening, a spring-retracted piston and rod movably fitted in the cylinder, a guided cross-head or member secured to the piston-rod, whereby they are adapted to move bodily in unison, a chambered member disposed exterior of the casing and carried by the cross-head, provided with air intake and outlet-nozzles, and a tubular connection uniting the outlet nozzle and said air-inlet opening of the cylinder; the intake-nozzle of said chambered element being adapted to engage the threading-eye of a shuttle, for the purpose herein set forth.

2. In a shuttle-threading implement of the character described, provided with a suitably mounted air-exhaust or vacuum cylinder, a piston and piston-rod movably mounted in the cylinder, and a vertically movable cross-head connected indirectly to said rod, the combination therewith of a movable chambered element N, secured to said cross-head having air intake and outlet-nozzles, a screen disposed in the chamber of said element for protecting its outlet passage, and a tubular element connecting said outlet nozzle and vacuum cylinder, for the purpose set forth.

3. In a shuttle-threading implement of the character described, provided with a casing member having a longitudinally slotted opening, and an air-exhausting cylinder mounted in the casing, the combination therewith of a spring-retracted piston and its rod, adapted for movement in the cylinder, a movable cross-head or block member mounted in and guided by said slotted portion, rigid connecting means secured to the piston-rod and cross-head, an air-intake element carried by the cross-head, adapted to engage the threading-eye of a shuttle, and a flexible tube connecting said air-intake element with the interior of said cylinder at a point above the piston, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

ANGELO RICCI.

Witnesses:

GEO. H. REMINGTON,
ANNÖBALE PETRARCO.