

No. 614,245.

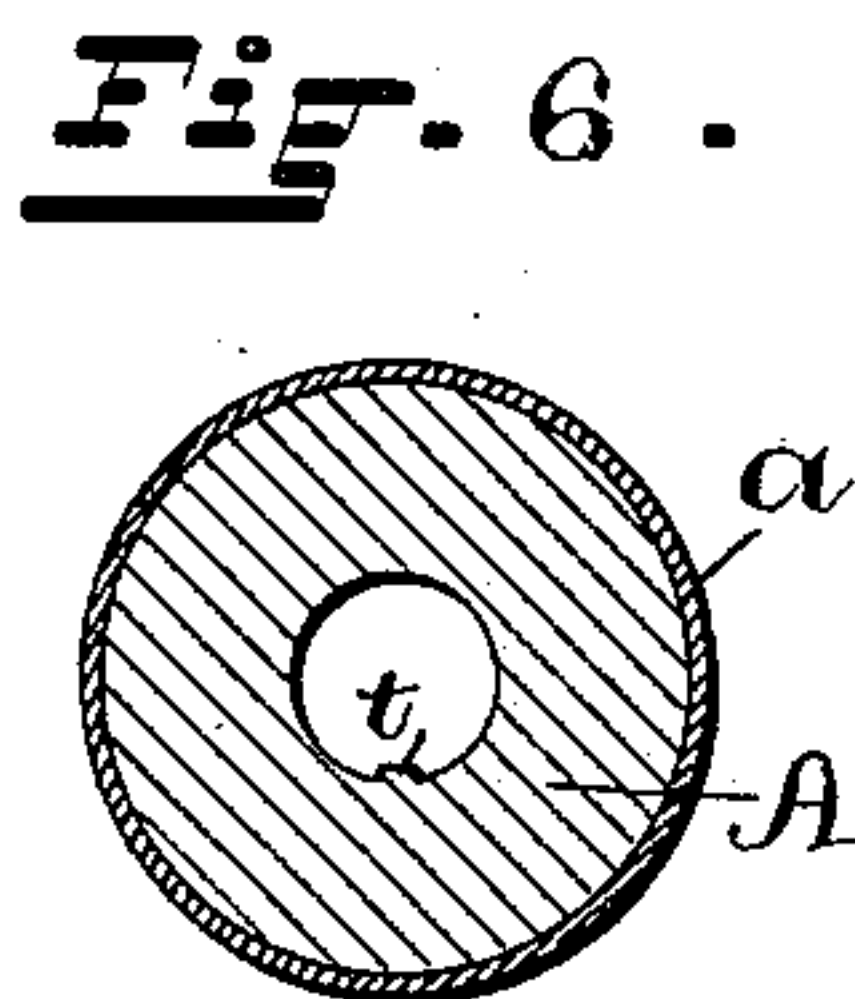
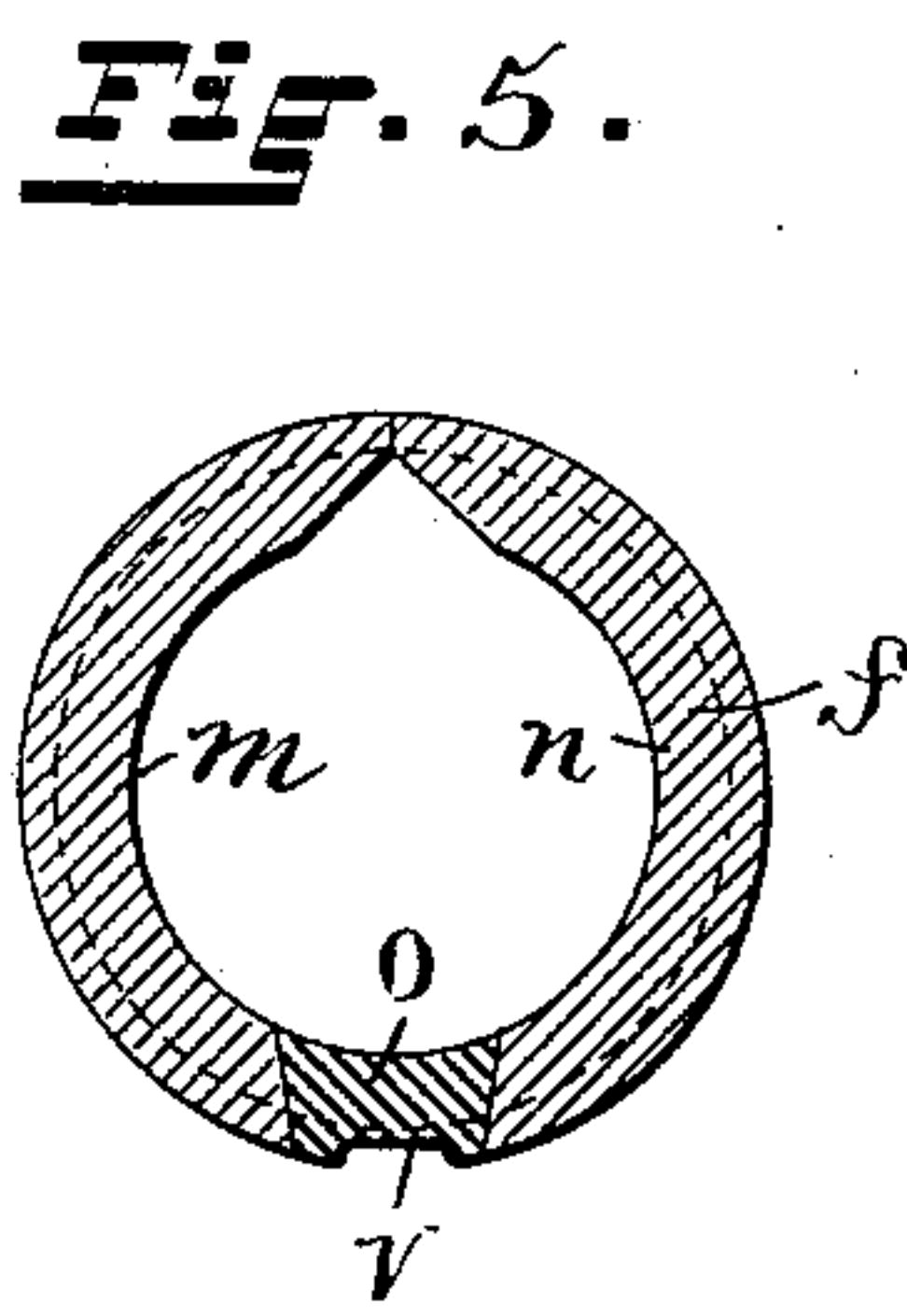
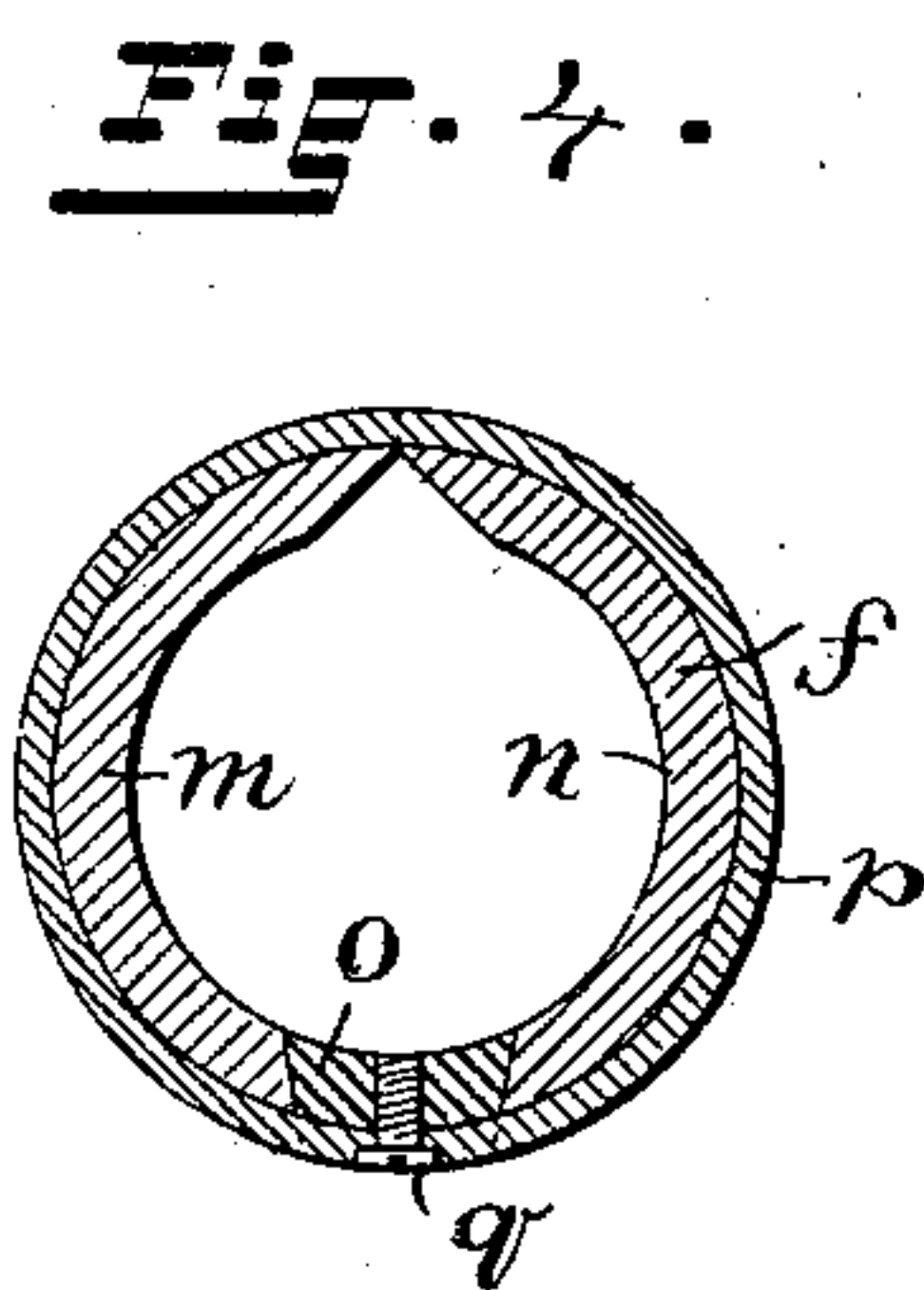
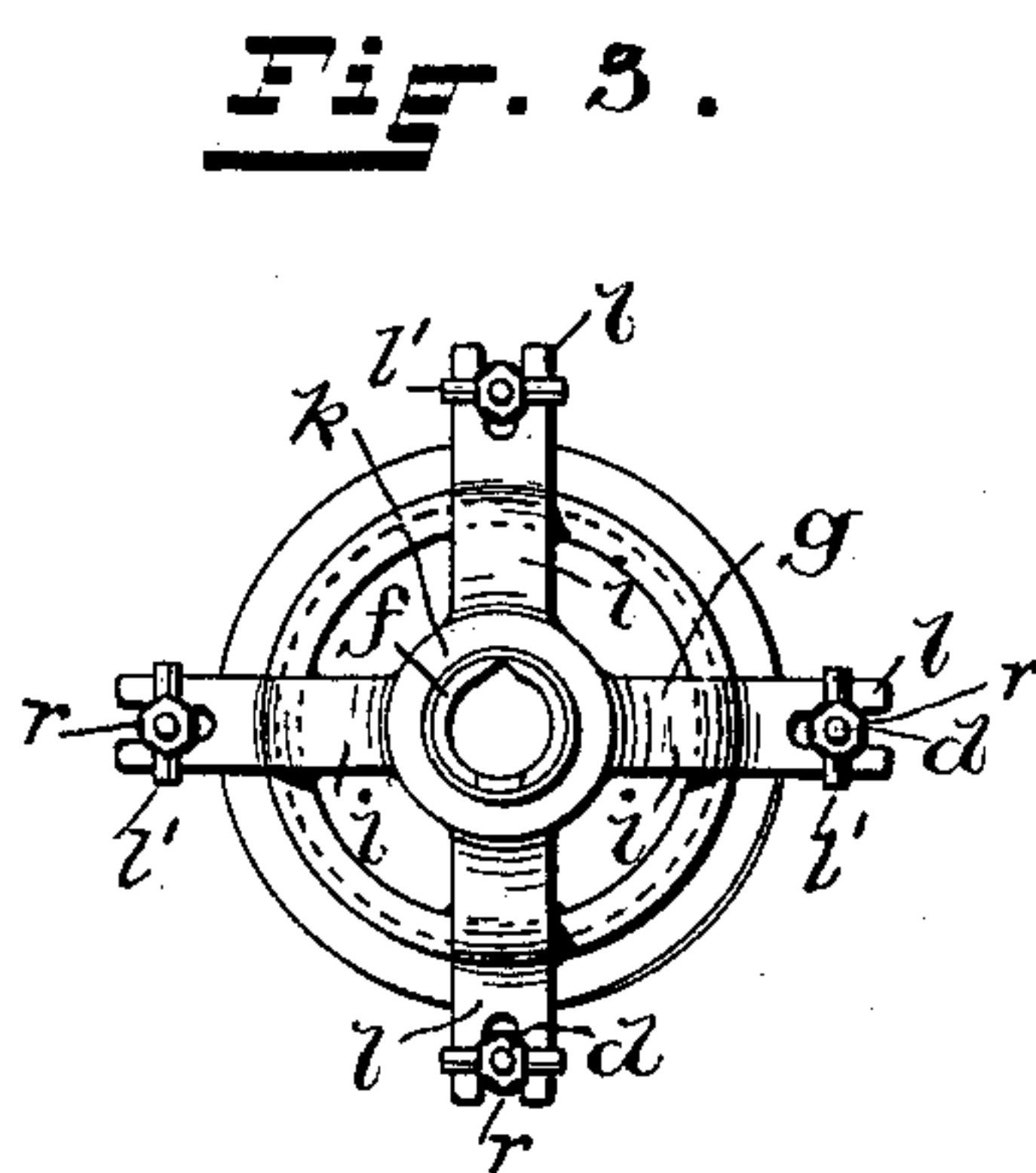
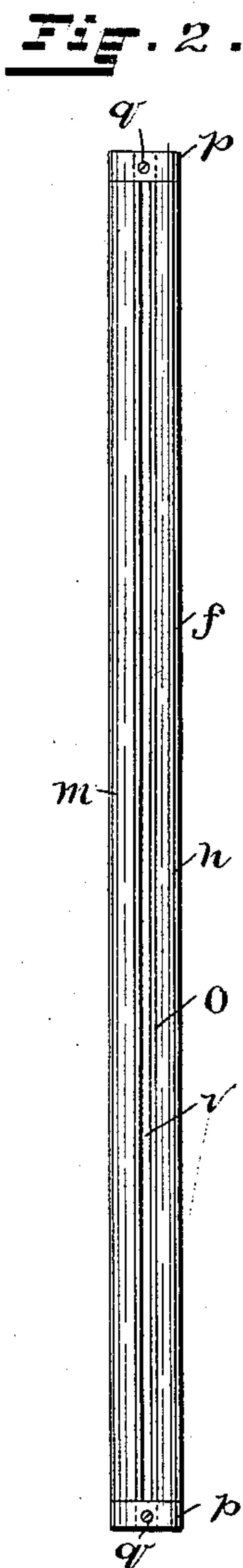
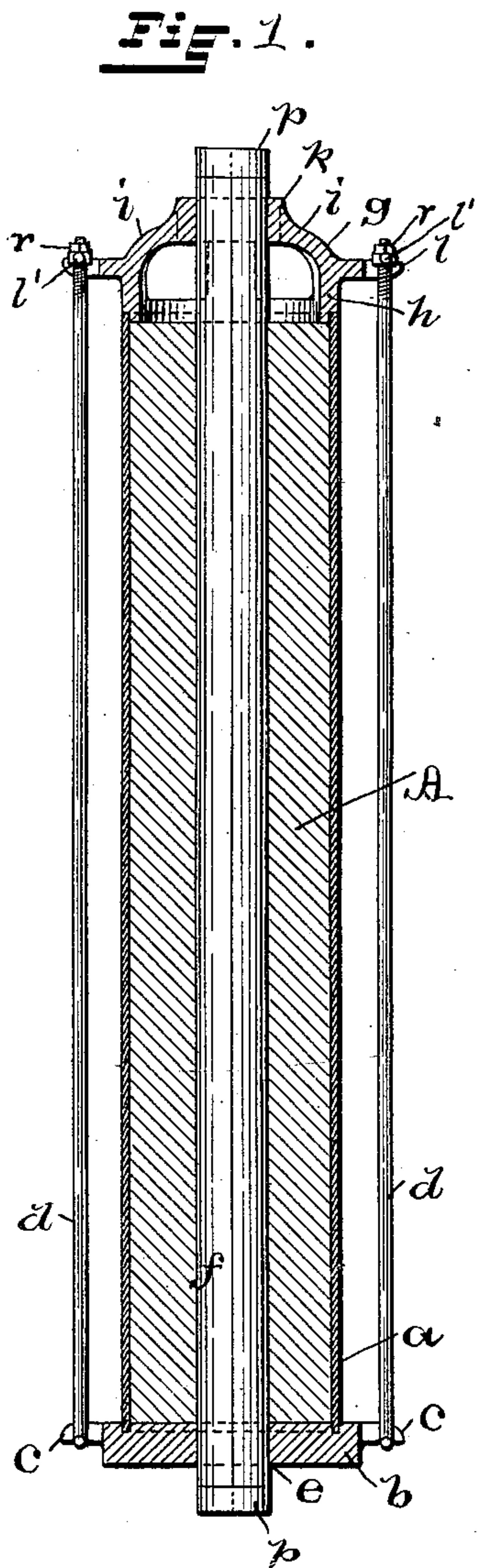
Patented Nov. 15, 1898.

E. EMERSON.

MOLO FOR MAKING CALICO PRINTERS' ROLLS.

(Application filed Jan. 19, 1897.)

(No Model.)



WITNESSES:

M. F. Bligh.  
Chas. H. Luther.

INVENTOR:

Elisha Emerson,  
by Joseph A. Miller & Co.,  
Attys.



# UNITED STATES PATENT OFFICE.

ELISHA EMERSON, OF BUFFALO, NEW YORK.

## MOLD FOR MAKING CALICO-PRINTERS' ROLLS.

SPECIFICATION forming part of Letters Patent No. 614,245, dated November 15, 1898.

Application filed January 19, 1897. Serial No. 619,734. (No model.)

*To all whom it may concern:*

Be it known that I, ELISHA EMERSON, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Molds for Making Calico-Printers' Rolls; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improved mold for making calico-printers' rolls.

Calico-printers' rolls consist of copper cylinders having thick walls. Such rolls are heavy, and as they must be made of the best quality of copper are correspondingly costly. Rolls of this kind are usually engraved with the desired pattern, and after being used for a season are turned down and a new pattern is engraved on the cylindrical surface of the rolls.

Calico-printers use a large number of standard patterns, and the rolls containing such patterns are either never turned down to have other patterns engraved on them or are used for a long succession of years before the pattern is turned down and another standard pattern engraved thereon. In a calico-printing establishment the capital invested in these standard rolls is very large, owing to the great aggregate weight of the refined pure copper contained in the rolls. The interest on this capital and the cost of insurance form a large item of the running expenses of such works.

Calico-printers' rolls, consisting of a copper cylinder strengthened by tin or other metal, have been made by casting the backing into the copper cylinder or between a central mandrel and the interior of the cylinder. Printers' rolls have also been made by drawing the copper cylinder over an iron core; but calico-printers' rolls so made were not practically useful, because the great pressure exerted on the copper cylinder separated the cylinder from the core or backing, and these rolls failed, after a short time of use, to register with the series of rolls used to print the different colors of a pattern.

This invention has reference to an improved mold for making calico-printers' rolls and in

the construction thereof, as will be more fully described hereinafter.

Figure 1 is a longitudinal sectional view showing a composite roll in a mold in which the backing has been cast into a copper tube. Fig. 2 is a side view of the core of the mold by which the mandrel-hole is formed with the usual spline for securing the roll to the mandrel when the roll is used. Fig. 3 is a top view of the mold; Fig. 4, a transverse section, on an enlarged scale, near the ends of the mandrel-core. Fig. 5 is an enlarged section of the mandrel-core at any point between the ends shown in Fig. 2. Fig. 6 is a transverse section of the improved composite calico-printers' roll.

Similar letters of reference designate corresponding parts in all the figures.

In the drawings, *a* indicates a seamless cylindrical tube of the pure copper of which calico-printing rollers are usually made; *b*, the bottom plate of the mold, provided with an annular groove to receive one end of the copper cylinder *a*; *c c*, lugs to receive the heads of the binding-rods *d d*; *e*, a central opening in which the core for the mandrel-hole is secured; *g*, a spider provided with the annular rim *h*, fitting the upper end of the copper cylinder *a*. The curved arms *i i* connect the central boss *k* with the rim *h*. The upper end of the core *f* extends through a hole in the boss *k*. The upper ends of the rods *d* are screw-threaded. A cross-bar *l*, having a central hole through which the rod *d* passes, extends across the slotted end or lug *l* of each of the arms *i*. The nuts *r r* on the screw-threaded ends of the rods *d* are screwed down onto the cross-bar *l* and draw the upper and lower part of the mold against the ends of the copper cylinder *a*.

The core *f* is made up of the two sections *m* and *n* and the dovetail strip *o*. These are secured together at the ends by the rings *p p*, the dovetail strip *o* being fastened by the screw *q* to the ring *p*. The dovetailed strip *o* is provided with the groove *v*, which corresponds with the spline *t*, in the finished roll.

*A* indicates the spelter or metal forming with the tube *a* the composite calico-printers' roll.



I will now more fully describe the preferred method of producing the composite roll, viz: The tube *a* of copper has the ends finished so as to tightly fit and make a close  
 5 joint in the annular groove of the plate *b* and the rim *h* of the spider *g*. The interior surface is thoroughly cleaned with acid, so as to remove all oxidation, and this inner surface may now be tinned or covered with a flux.  
 10 The tube *a* is now secured firmly between the plate *b* and the spider *g*. The core *f* is inserted and the melted metal spelter or composition of metals—such as brass, bronze, or Babbitt metal—is poured into the space between the  
 15 tube *a* and the core for the mandrel *f*, and when sufficiently cooled the composite roll is removed from the mold, the screws *q q* are removed from the mandrel-core *f*, the dovetail strip *o* is forced inward to permit the parts  
 20 *m* and *n* to be withdrawn, and the ends are then turned off true in a lathe. The roll so produced accurately fits the ordinary mandrel and may be used in the same manner as a solid copper roll. The thickness of the copper  
 25 tube *a* is sufficient to receive successively one, two, or, if desired, more engraved patterns, while the cost of these rolls is much less than the solid copper rolls as heretofore made.

Having thus described my invention, I 30  
 claim as new and desire to secure by Letters Patent—

1. In a mold for producing composite calico-printers' rolls, the combination with the bottom plate *b* having an annular groove for the 35  
 reception of the end of the cylinder *a*, a central opening for the mandrel-core *f* and the lugs *c, c*, of the spider *g* having the annular rim *h*, the arms *i, i*, the central perforated boss *k* and the lugs *l*, the mandrel-core 40  
*f* supported at opposite ends in the center of the tube *a*, and the rods *d, d*, screw-threaded, as described, and provided with nuts, whereby the parts of the mold are secured together, as described. 45

2. The combination with a mold for casting inferior metal into a copper tube to form calico-printers' rolls, of a mandrel-core consisting of the sections *m* and *n*, the dovetail strip *o* provided with the groove *v*, the rings *p, p*, 50  
 and screws *q, q*, whereby the mandrel may be withdrawn from the tube, as described.

In witness whereof I have hereunto set my hand.

ELISHA EMERSON.

Witnesses:

JOSEPH A. MILLER,  
 JOSEPH A. MILLER, Jr.