

No. 684,714.

Patented Oct. 15, 1901.

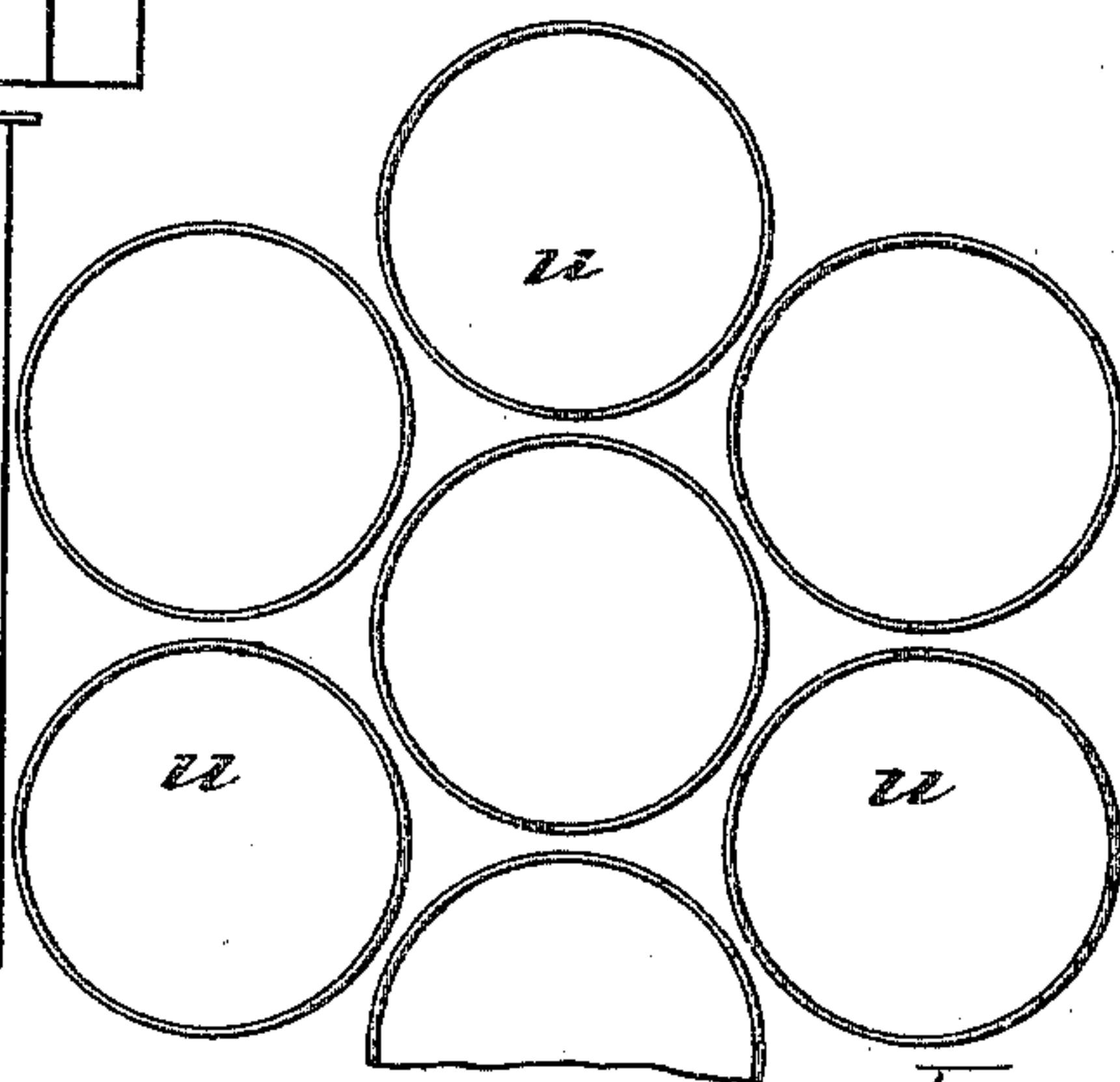
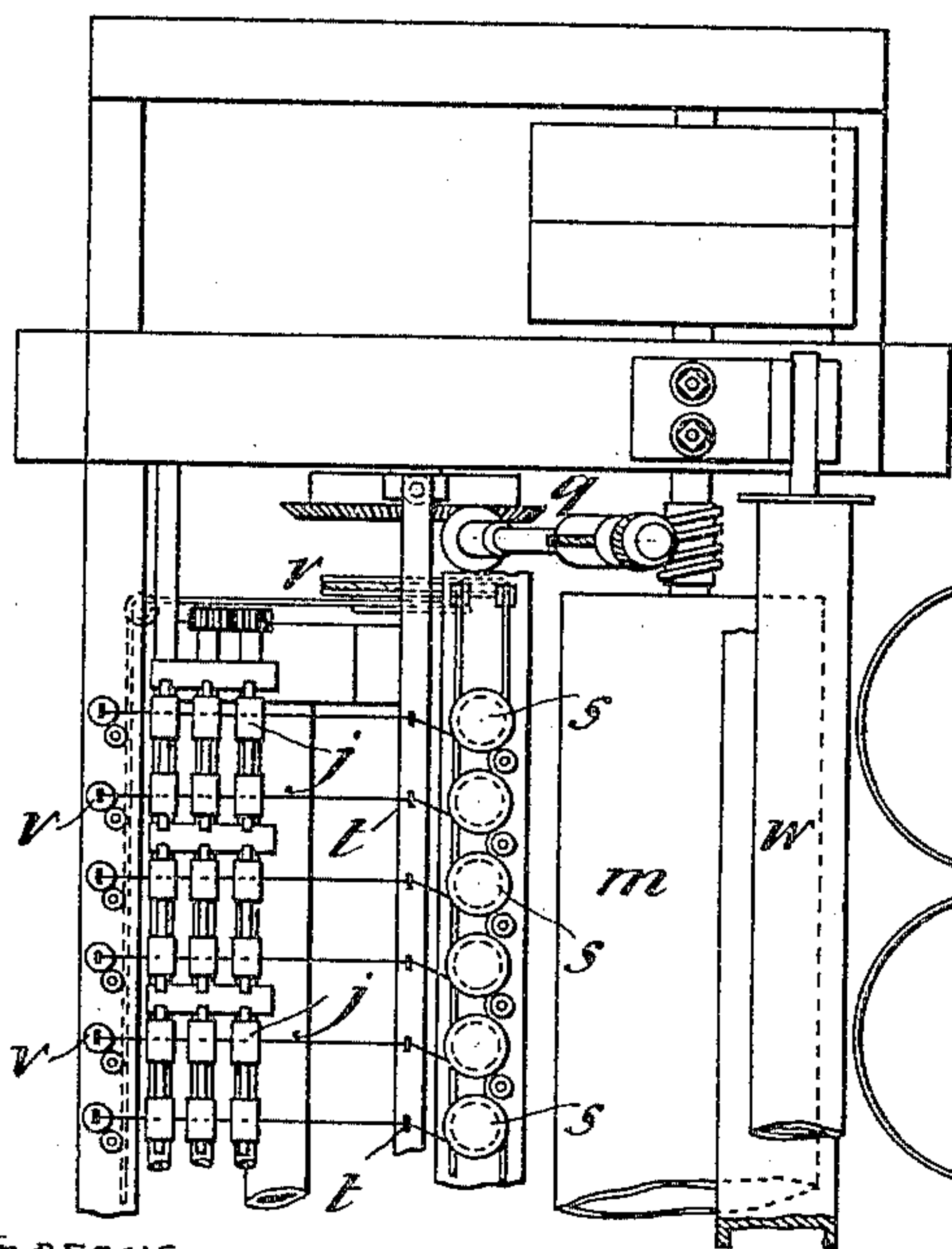
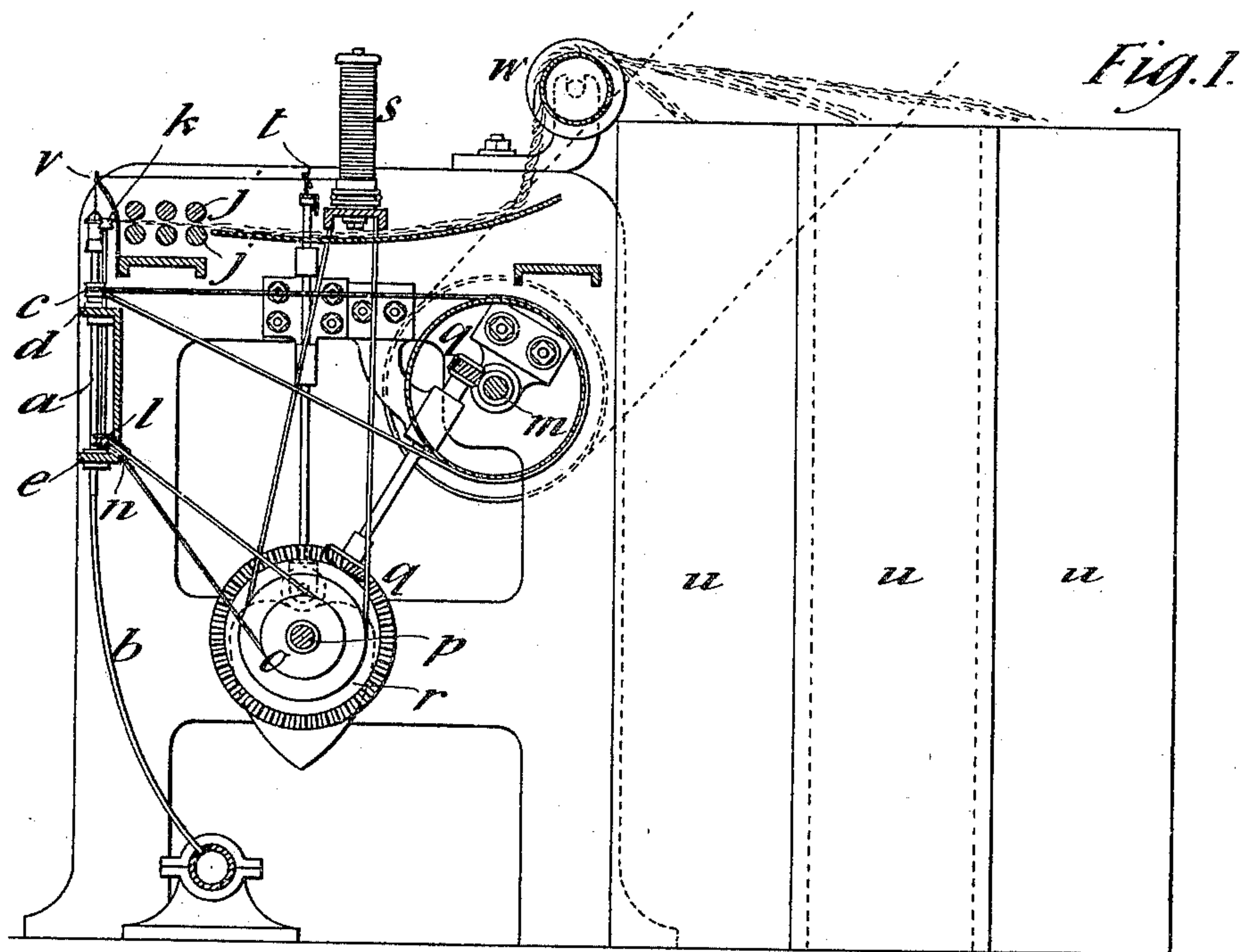
W. A. PHILLIPS.

APPARATUS FOR SPINNING COTTON, &c.

(Application filed Feb. 21, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

*F. B. Kiefer*

*James S. Elliott.*

Inventor

*William A. Phillips*

by

*James L. Norris*

*att'y*

No. 684,714.

Patented Oct. 15, 1901.

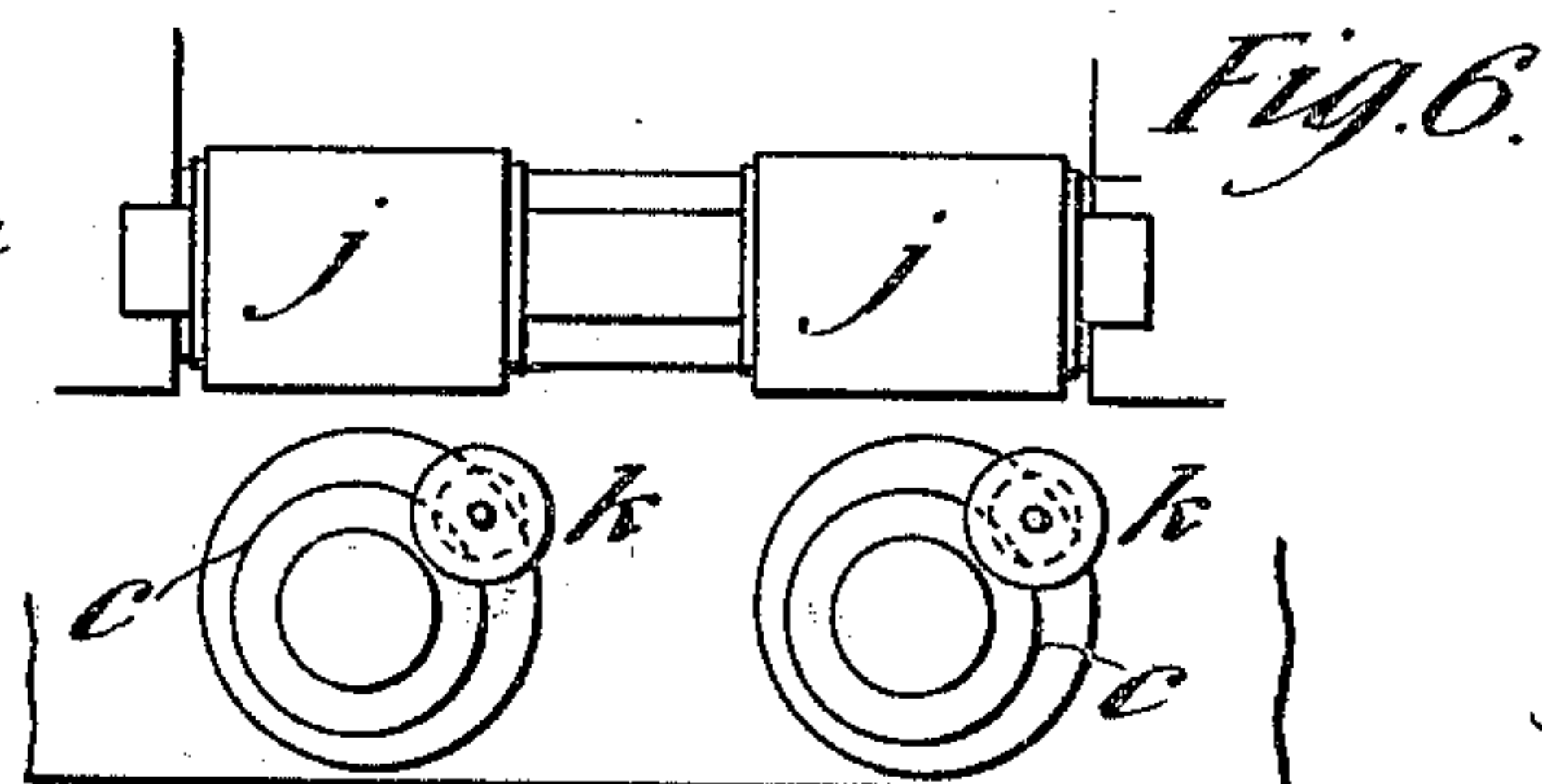
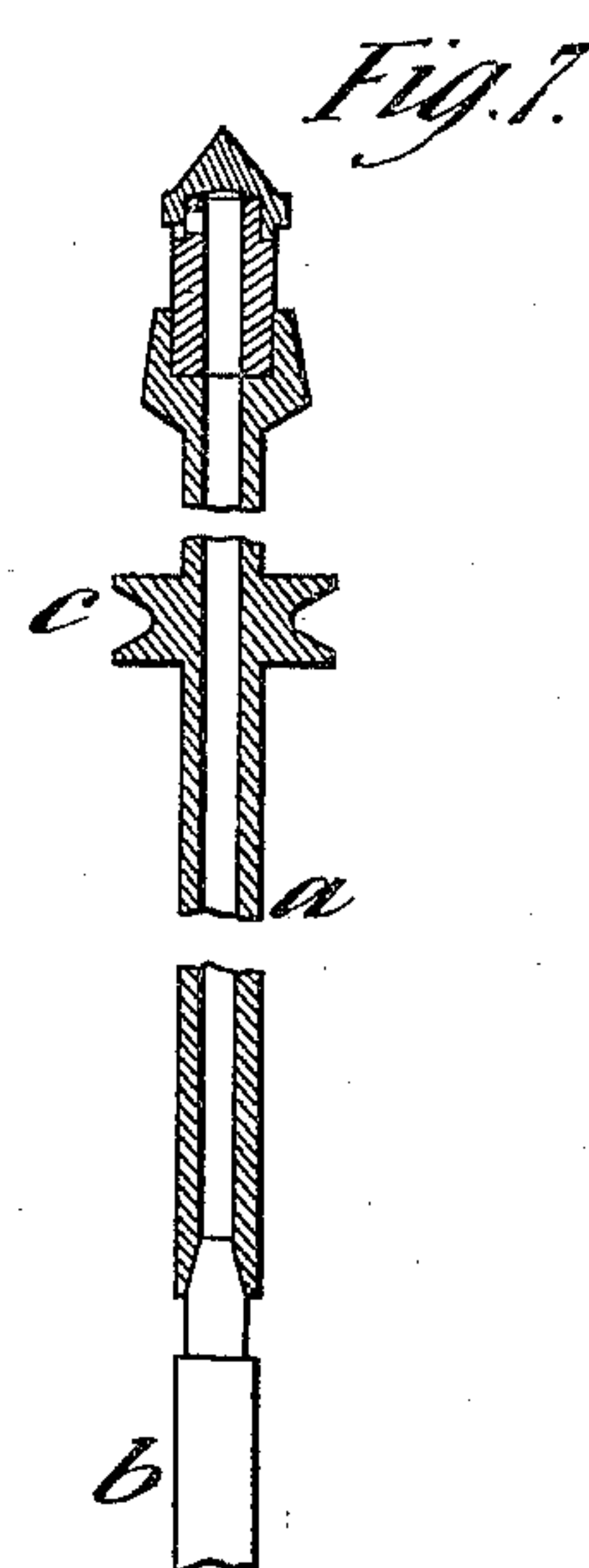
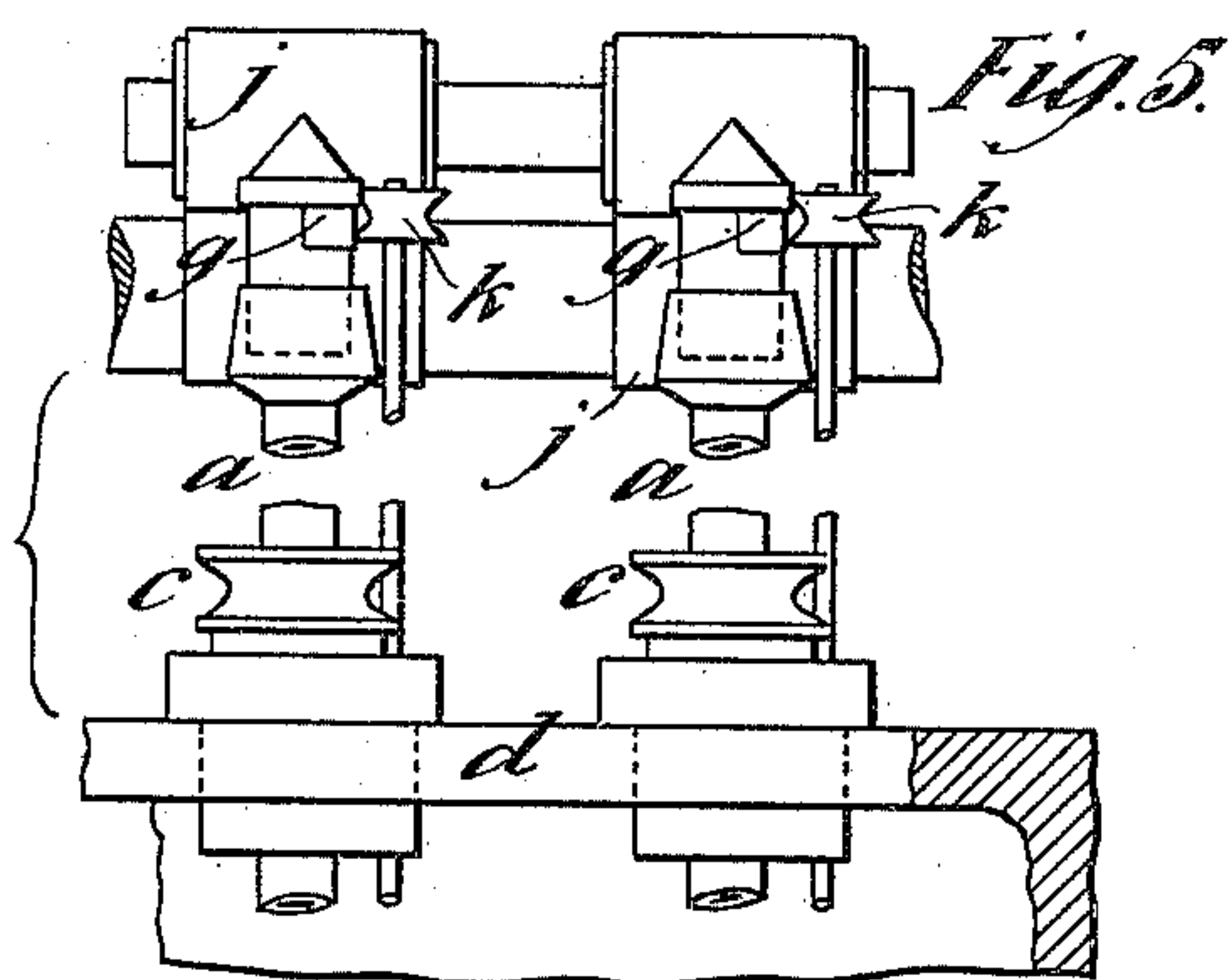
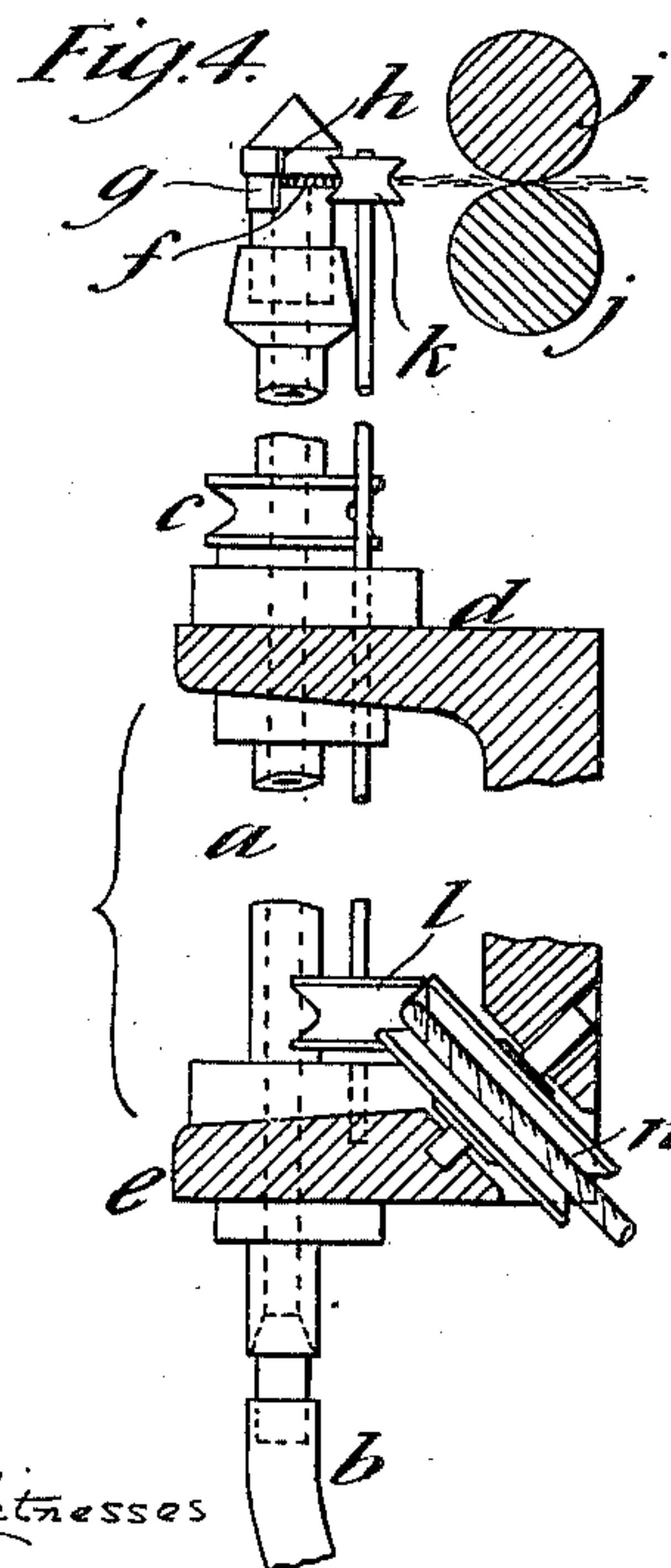
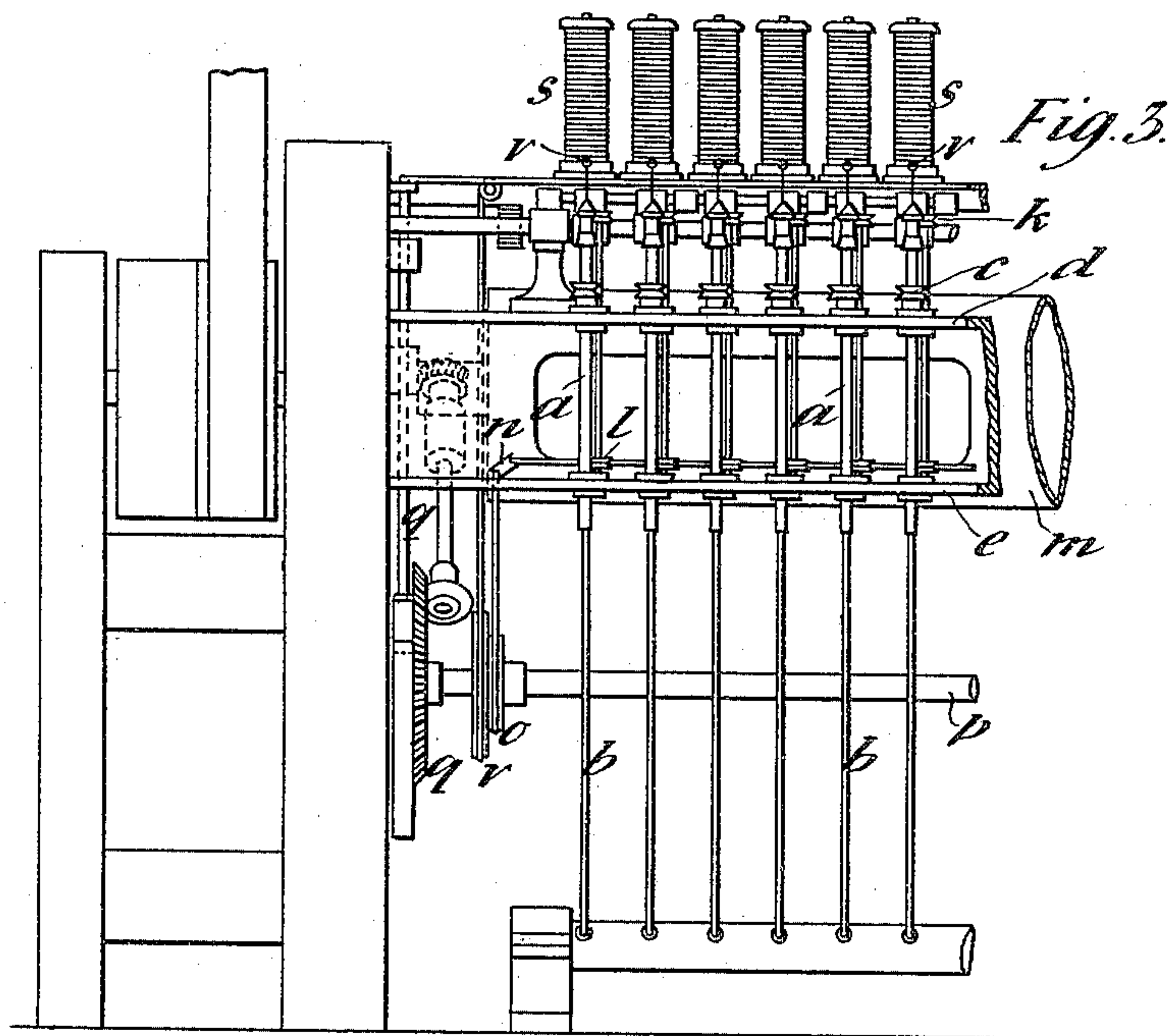
W. A. PHILLIPS.

APPARATUS FOR SPINNING COTTON, &c.

(Application filed Feb. 21, 1901.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses

*H. B. Meyer*  
*Pruce D. Elliott*

Inventor

*William A. Phillips*  
*James L. Norris*

att'y



No. 684,714.

Patented Oct. 15, 1901.

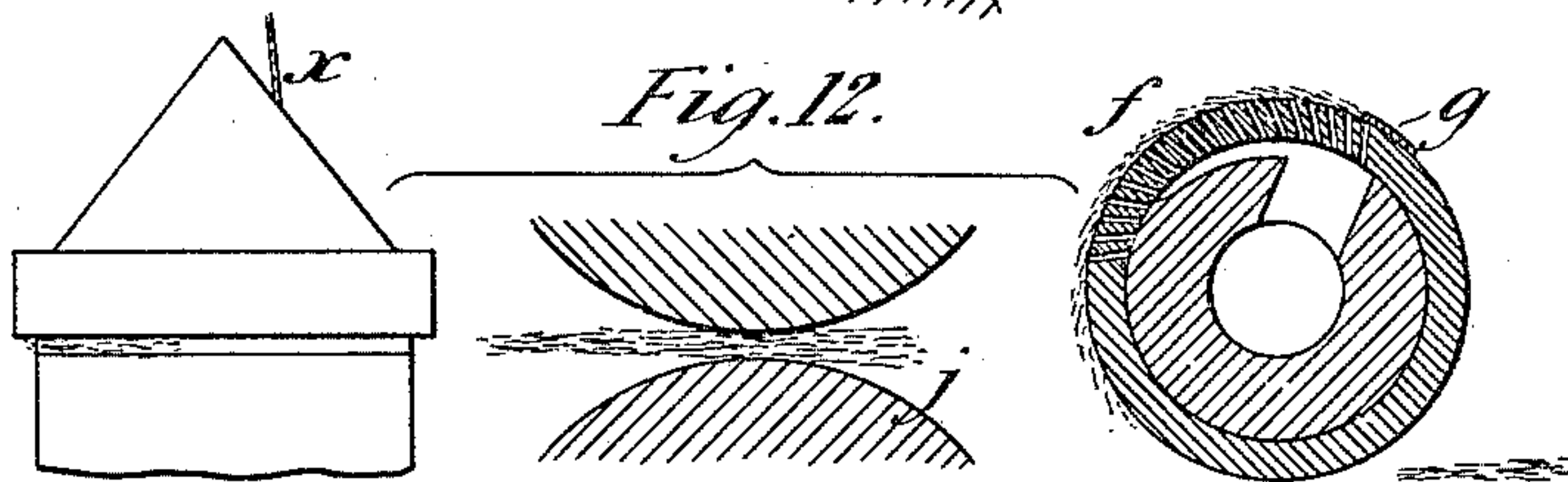
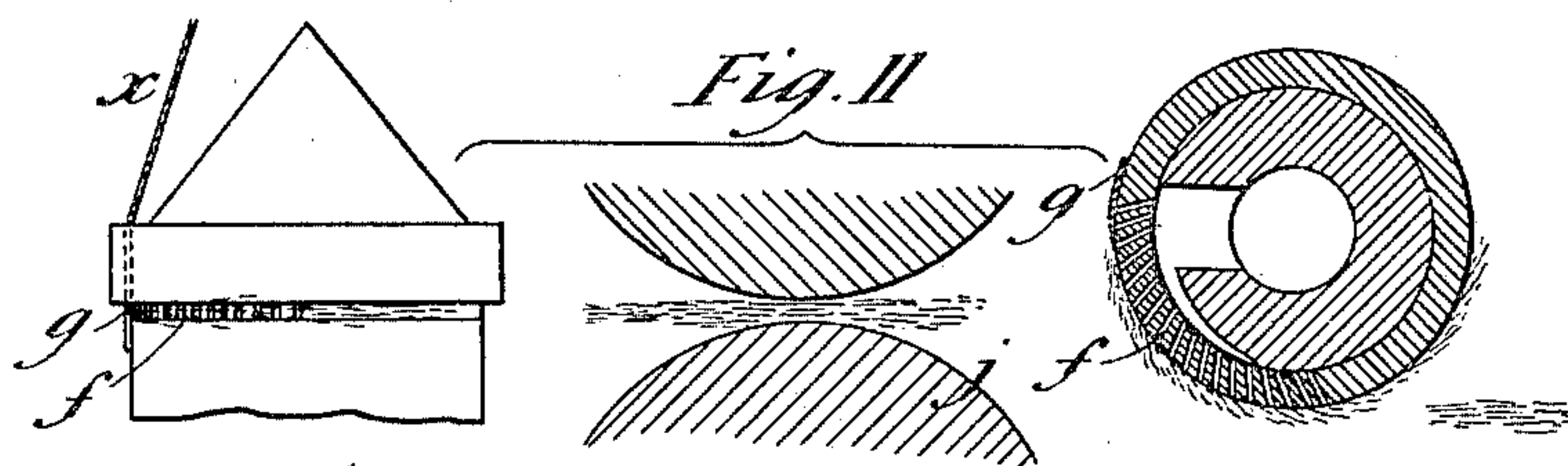
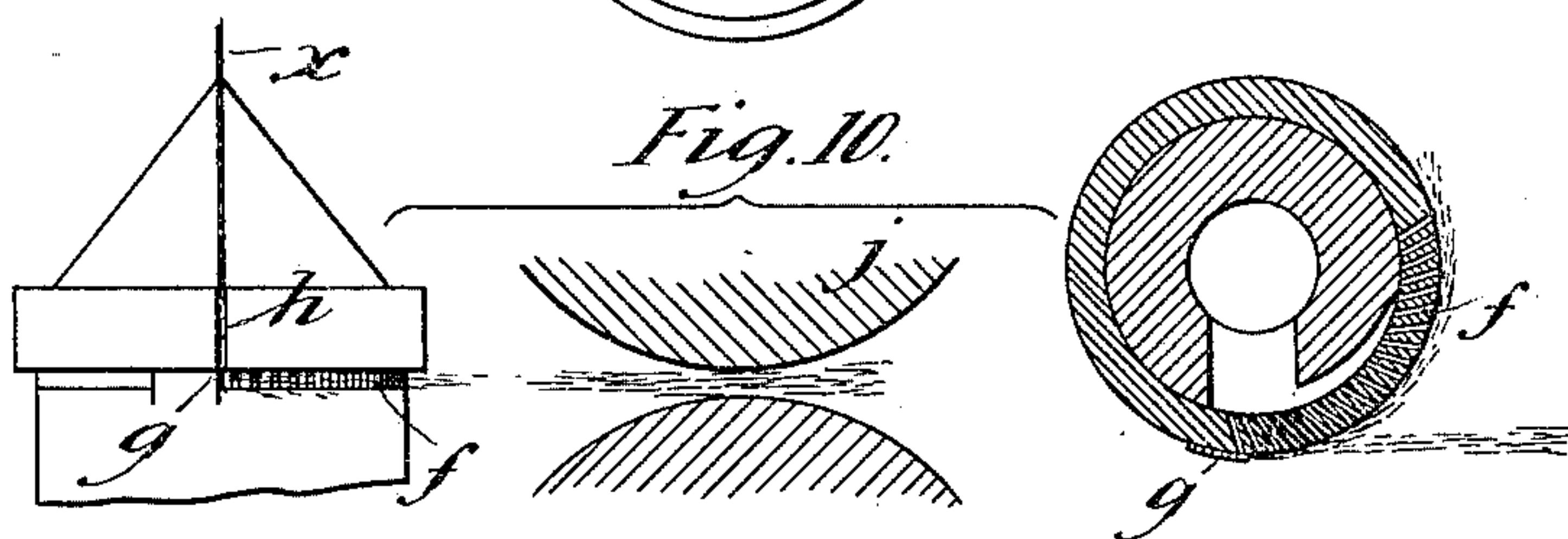
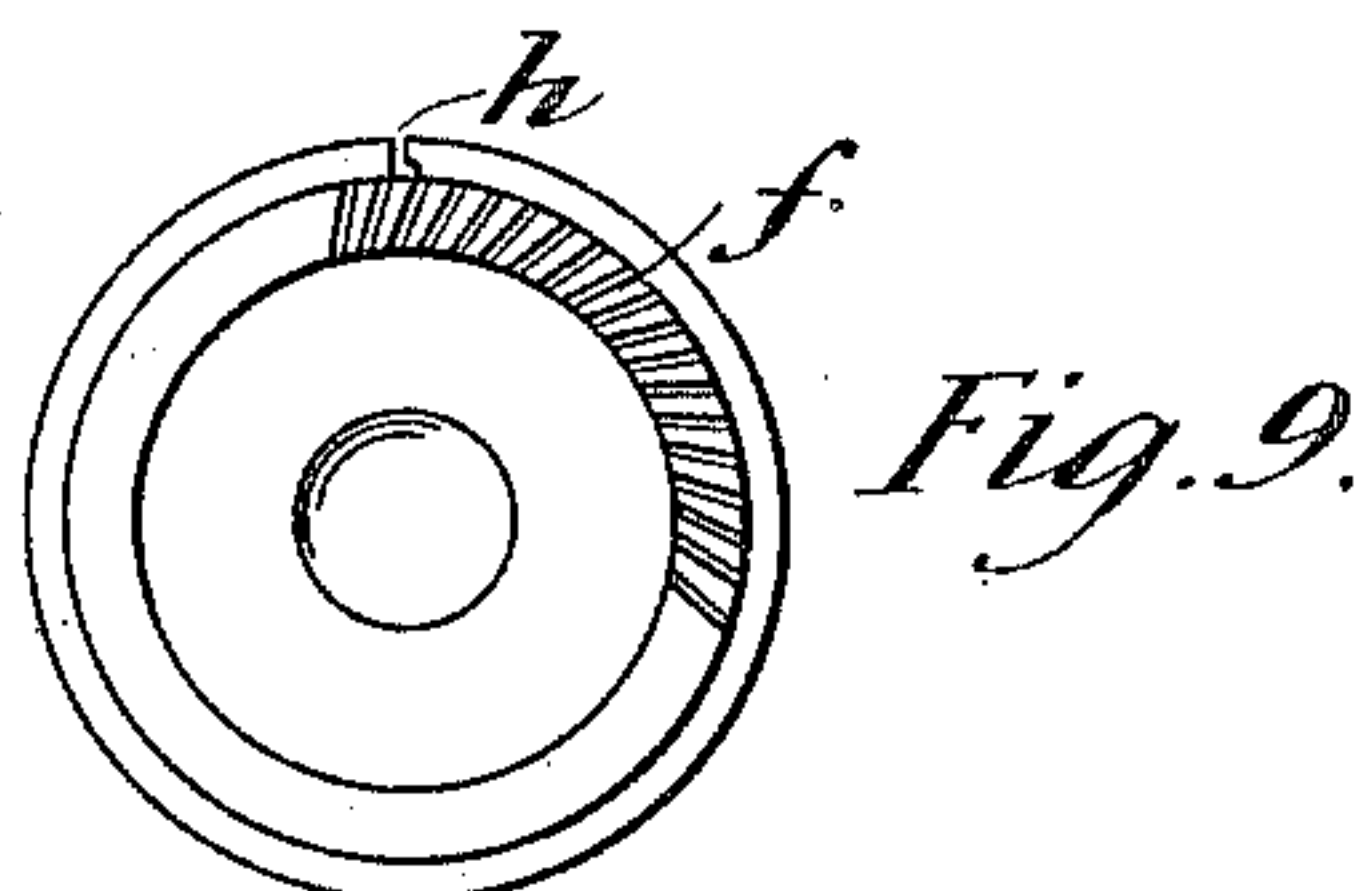
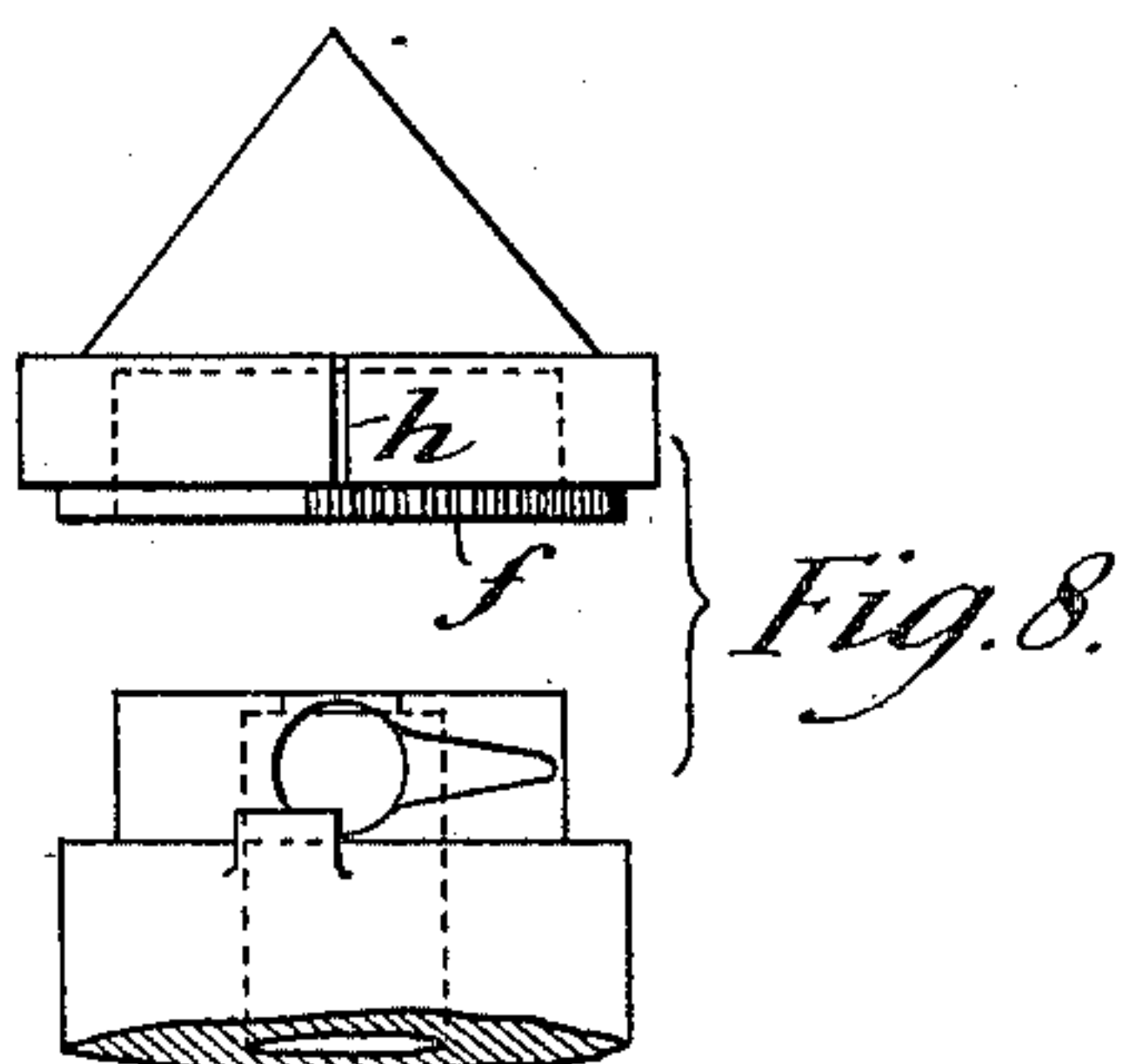
W. A. PHILLIPS.

APPARATUS FOR SPINNING COTTON, &c.

(Application filed Feb. 21, 1901.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses:

*H. Bryan*  
*Francis R. Orney*

Inventor  
*William A. Phillips*

By *James L. Norris*  
*Atty*



# UNITED STATES PATENT OFFICE.

WILLIAM ALFRED PHILLIPS, OF LONDON, ENGLAND, ASSIGNOR TO THE NEW CENTURY FINANCE COMPANY, LIMITED, OF ADELPHI, ENGLAND.

## APPARATUS FOR SPINNING COTTON, &c.

SPECIFICATION forming part of Letters Patent No. 684,714, dated October 15, 1901.

Application filed February 21, 1901. Serial No. 48,355. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM ALFRED PHILLIPS, a citizen of England, residing at 12 Euston Buildings, Euston Square, London, England, have invented a certain new and useful Apparatus for Spinning Cotton, &c., (for which I have applied for a patent in Great Britain, dated July 25, 1900, No. 13,402,) of which the following is a specification.

My invention relates to an apparatus for spinning cotton and other fibers by means of a spinning instrument or spinner of a novel kind operating on a novel principle. In order that this may be better understood, I shall describe a spinning-machine in which a number of these spinners with appropriate feed and draw rollers and bobbins are arranged in a row and worked through suitable driving-gear.

Figure 1 is a transverse section of the machine. Fig. 2 is a part plan, and Fig. 3 is a part front elevation, at one end of the machine. Fig. 4 is an elevation of one of the spinners with its draw-rollers and supporting-rails shown in section. Fig. 5 is an elevation, and Fig. 6 is a plan, showing two of the row of spinners. Fig. 7 is a vertical section of the spinner and its supporting-tube. Fig. 8 shows an enlarged side elevation of the spinner with the upper part separate from the lower part. Fig. 9 is a plan of the upper part of the spinner looking from below. Figs. 10, 11, and 12 represent an elevation and sections of the head, showing the action.

The spinner itself comprises a tube *a*, the lower end of which is connected by a flexible pipe *b* to a vessel, in which a partial vacuum is maintained by an air-pump. The tube has on it a driving-pulley *c* and is journaled in suitable bearings in rails *d e*. On the top of the tube is a hollow head, into which air is drawn through a number of small apertures or slits *f*, which terminate against a projecting shoulder *g* and are situated just under an annular rib, through which there is a vertical slit *h* near the termination of the slits. Behind the spinner are several pairs of feed and draw rollers *j*, which are loaded and driven at suitable speeds, as in an ordinary spinning-frame, and toward one side of the spinner, between it and the nearest pair of

rollers, is mounted a guide-pulley *k* on a spindle having a driving-pulley *l*. A number of spinners are mounted in a row and have their pulleys *c* driven by separate bands from a cylinder *m*, while the pulleys *l* are driven by a continuous band pressed against them by intermediate guide-pulleys, the band passing over guide-pulleys *n* from a pulley *o* on a shaft *p*. This shaft *p* is driven by worm and bevel gear *q* from the shaft of the cylinder *m*, and it has on it a pulley *r*, which by means of bands drives the pulleys on the spindles of bobbins *s*, and has also on it cams which move up and down the traversing guide-eyes *t*.

Cotton or other rovings of fiber taken from the tubes *u* over a guide-roller *w* are passed through between the rollers *j* and led on the one side of each of the guide-pulleys *k* up to the rapidly-revolving spinners, to which the end fibers of the roving are drawn by the suction through the slits *g*. Threads being once started and led through the slits *h*, through stationary guide-eyes *v* above the spinners, and through the traversing guide-eyes *t* to the bobbins *s*, which are revolving, threads are continuously spun from the ends of the rovings and are wound on the bobbins *s*.

The operation of the spinners is as follows: When the upper part of the spinner is placed upon the lower part, with the slit *h* in line with the right edge or shoulder of the projection *g* on the lower part, the upper part is held in that position by the pressure of the atmosphere, there being a vacuum within the spinner; but it might have a pin entering a hole in the lower part to prevent it from turning. A number of fibers at the end of the roving are caused by the outer air rushing through the serrations *f* to press against these serrations, and then the operator draws a thread *X* from the bobbin and introduces it into the slit *h* over the fibers lying there, this thread ending at the lower side of the projection *g*. On now causing the spinner to revolve the fibers are wound on the thread and drawn up with it through the slit, being spun as they ascend, while fresh fibers are at every revolution of the spinner drawn onto it to join with and to become spun continuously



with the fiber already spun, Figs. 11 and 12. Should the thread that is being spun happen to break, it is only necessary to pull it down and insert its lower part into the slit *h* in order to have fresh fibers connected to it and so as to continue the thread. Although the serrated part, which forms the inlets for air to the interior of the spinner, extends over only a small part of the circumference, the fibers which had been drawn onto the serrations having their front ends already connected to the thread that is being spun are drawn farther out from the roving as the spinner revolves by being wound on the part which is not serrated and are finally drawn quite away to form part of the thread, fresh sets of fibers continually taking their place.

Although I have shown on the drawings only several spinners and their accessories, it is obvious that the frame and gearing may be extended to accommodate any number that can be conveniently worked together.

Having thus described the nature of this

invention and the best means I know of carrying the same into practical effect, I claim—

1. A spinner consisting of a tube, a head therefor having air-openings, a projecting shoulder, a projecting rib and a vertical slit, bearings for said spinner, rotating means for said spinner, a vacuum-chamber connected to said tube, in combination with pairs of feed and draw rollers, a guide-pulley, stationary and traversing guide-eyes, and a bobbin.

2. In an apparatus for spinning cotton or other fibers, a tube, a head therefor provided with air-openings, a rib projecting from said head and provided with a slit, means connected to said tube for forming a partial vacuum, and rotating means for said tube.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM ALFRED PHILLIPS.

Witnesses:

GEO. M. RUNKLIN,

WM. HARRIS.