

(No Model.)

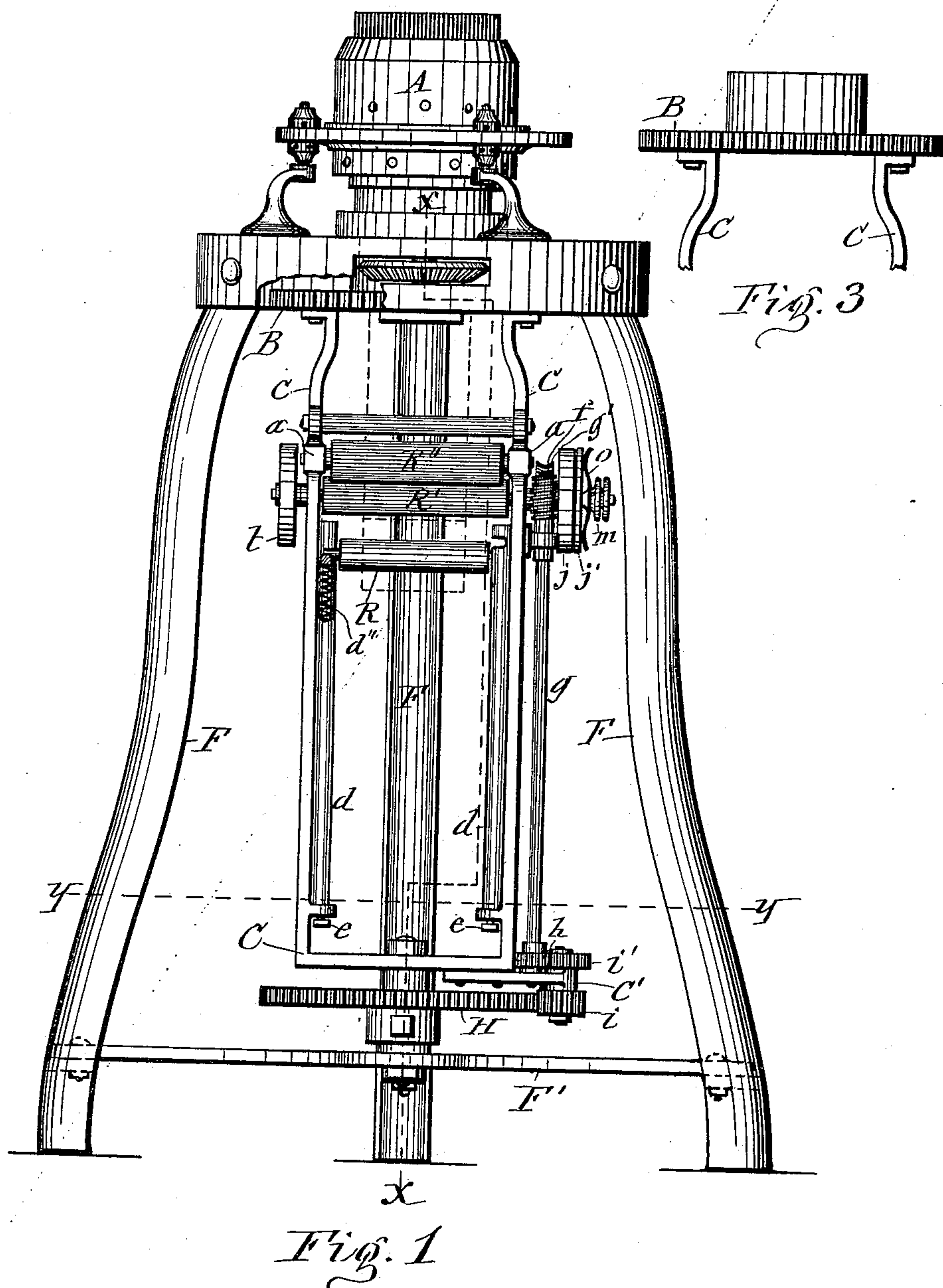
3 Sheets—Sheet 1.

W. HOSE & H. CURTIN.

AUTOMATIC TAKE-UP FOR ROTARY KNITTING MACHINES.

No. 463,788.

Patented Nov. 24, 1891.



WITNESSES:

C. L. Bendixon
Mark W. Dewey

INVENTORS
Wallace Hose and
Henry Curtin
By Smith, Lucas and
ATTORNEYS.

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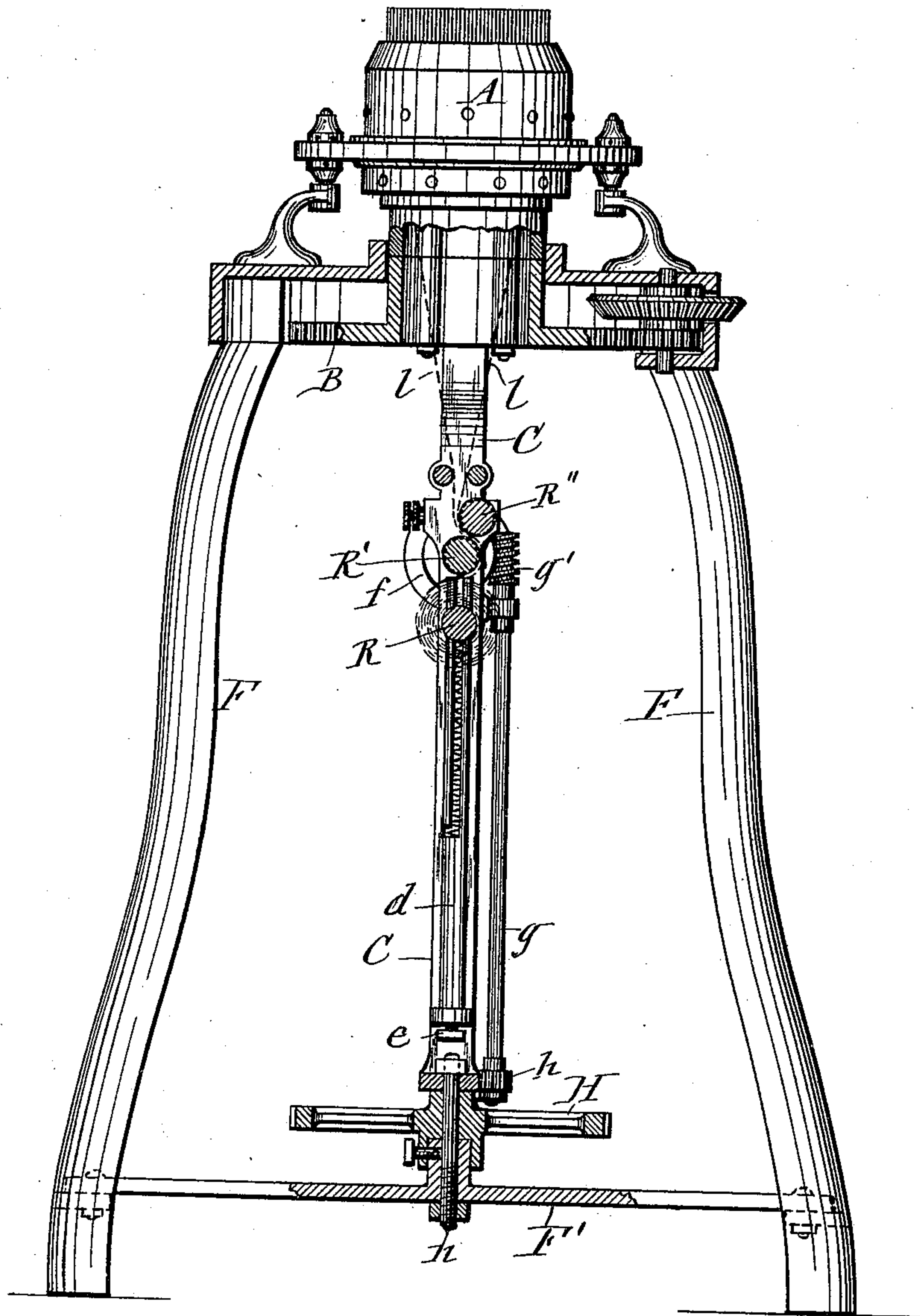


Fig. 2

WITNESSES:

C. L. Bendixon
Mark W. Dewey

INVENTORS:

Wallace Hose
and Henry Curtin
By *Smith, Lucas & Smith*
ATTORNEYS.

(No Model.)

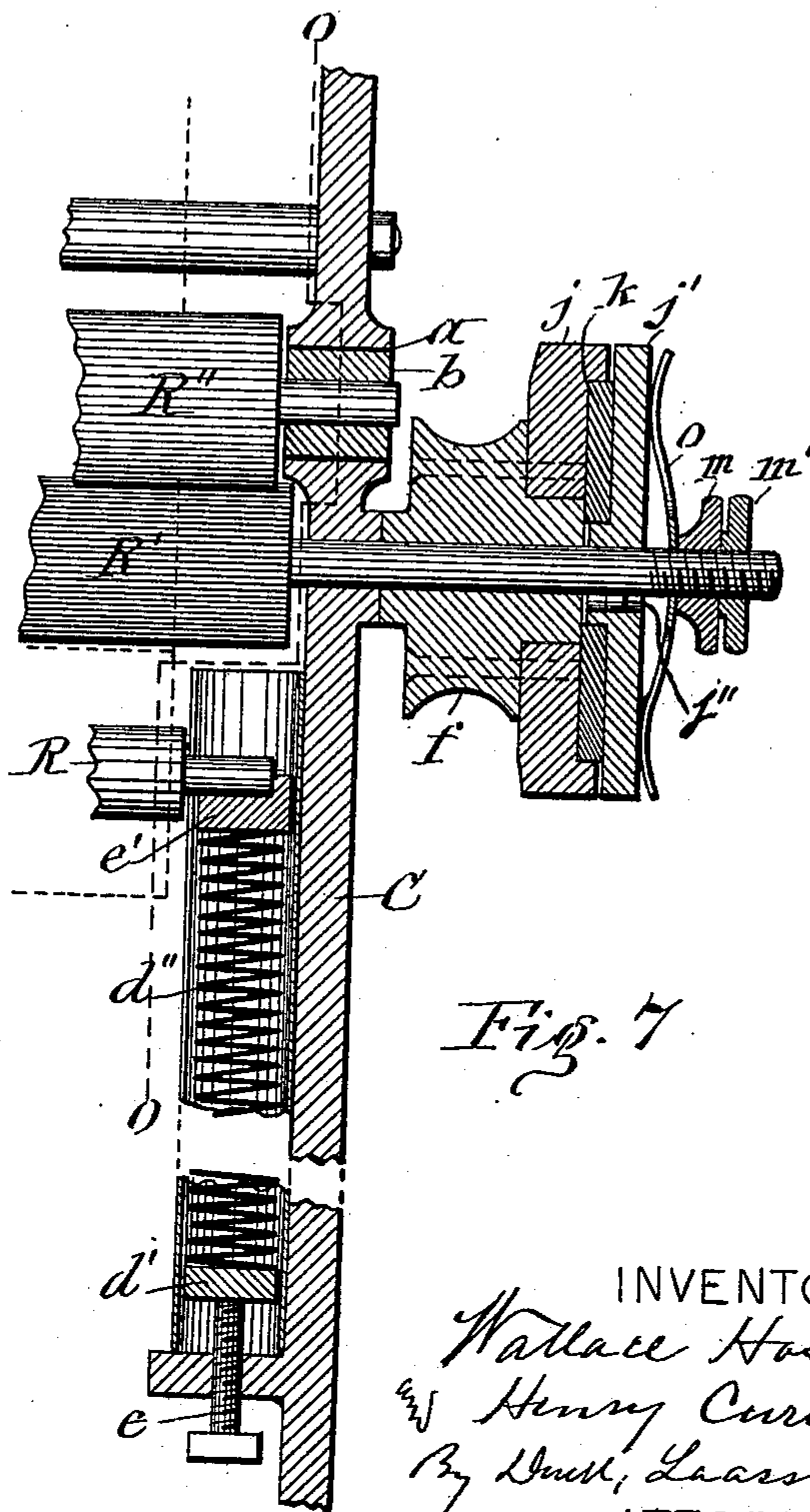
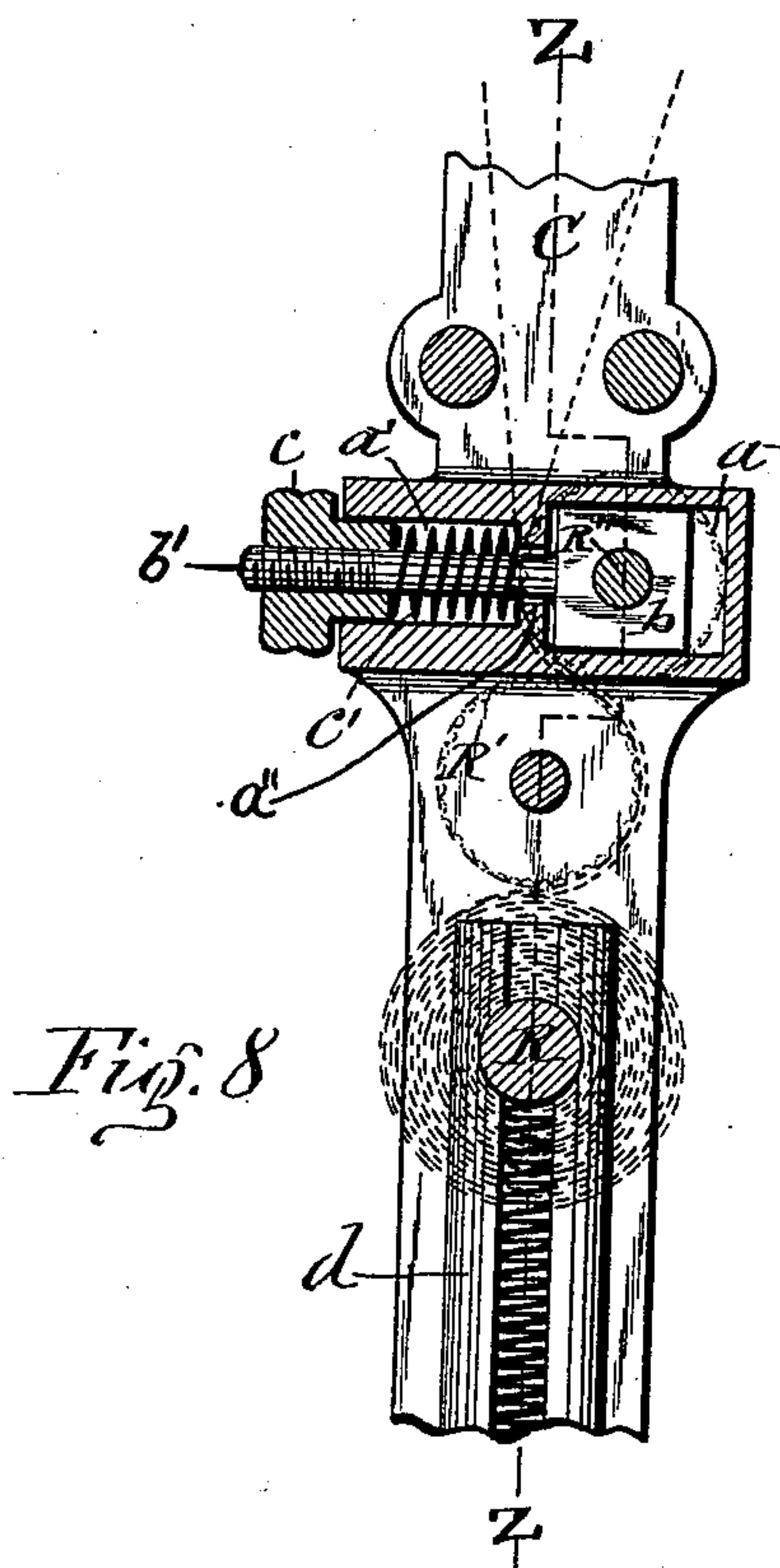
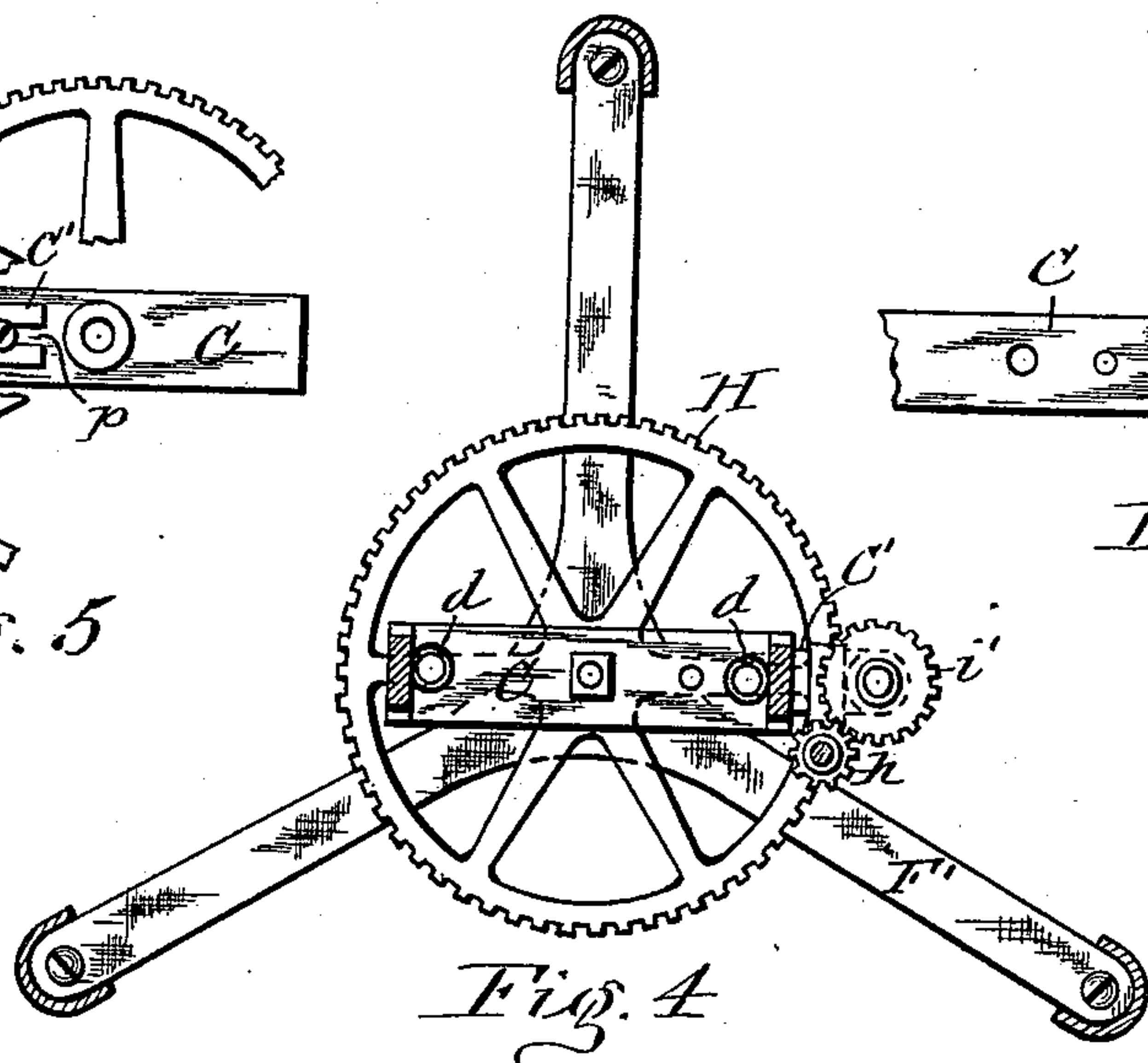
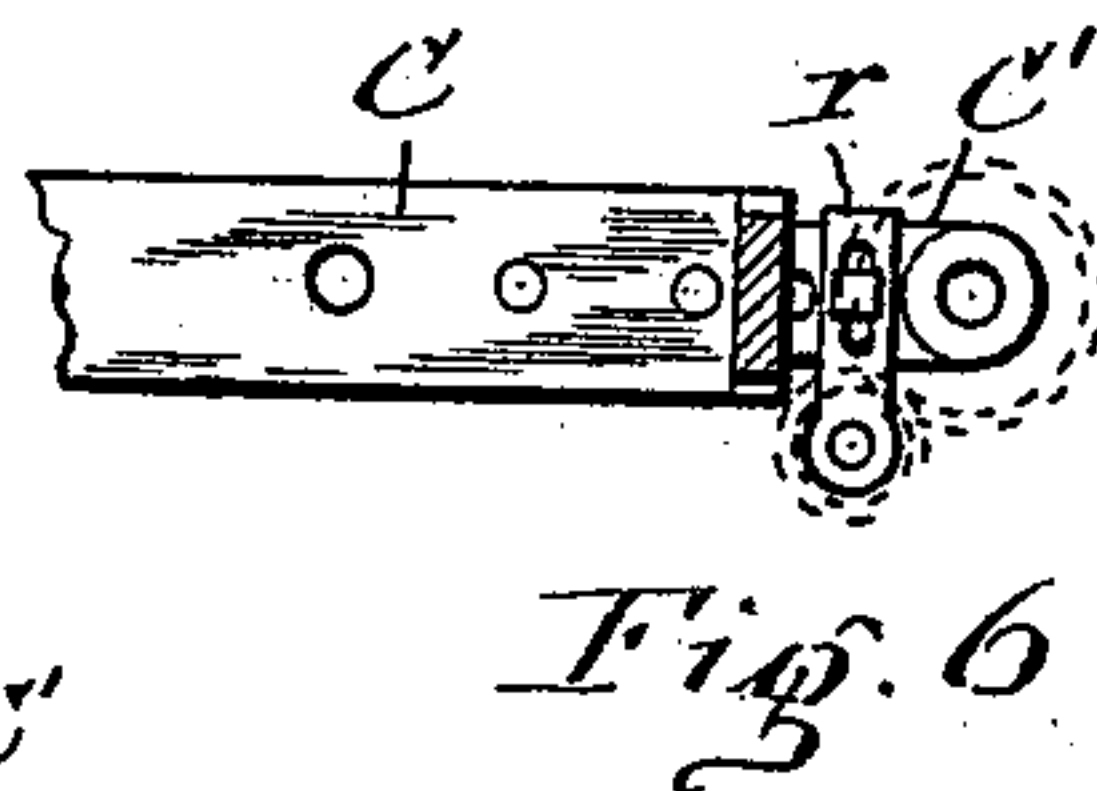
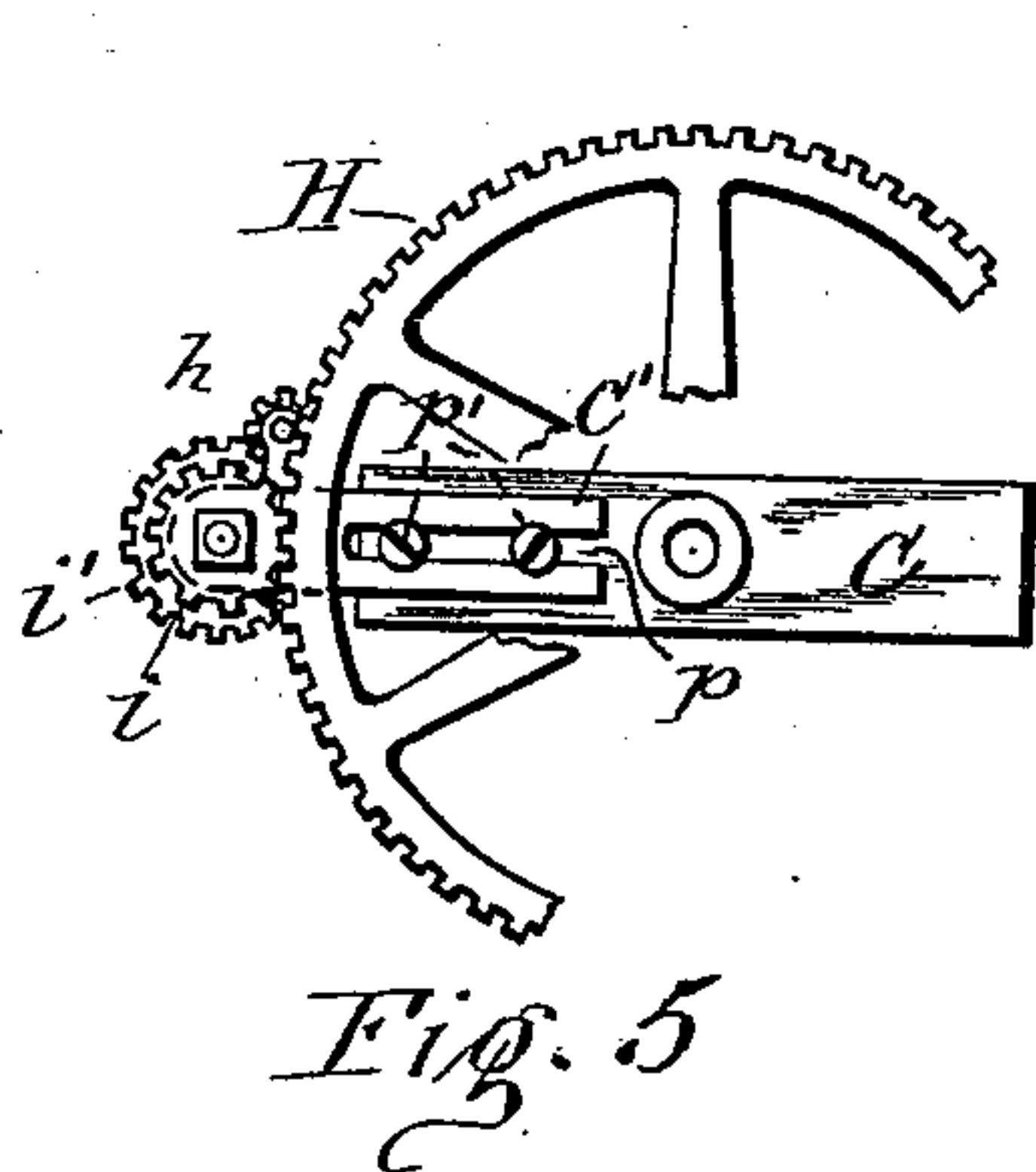
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UNITED STATES PATENT OFFICE.

WALLACE HOSE AND HENRY CURTIN, OF LITTLE FALLS, NEW YORK.

AUTOMATIC TAKE-UP FOR ROTARY KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 463,788, dated November 24, 1891.

Application filed June 17, 1891. Serial No. 396,564. (No model.)

To all whom it may concern:

Be it known that we, WALLACE HOSE and HENRY CURTIN, of Little Falls, in the county of Herkimer, in the State of New York, have
5 invented new and useful Improvements in Automatic Take-Ups for Rotary Knitting-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

10 The purpose of this invention is automatically to take up and wind neatly and compactly upon a roller the fabric issuing from the needle-cylinder of a rotary knitting-machine and to effect the same at a continuous
15 and uniform speed corresponding to the speed of knitting; and to that end the invention consists in the novel take-up mechanism hereinafter fully described, and set forth in the claims.

20 In the annexed drawings, Figure 1 is a side elevation of a knitting-machine embodying our invention, a portion of the frame being broken away to illustrate more important parts of the machine. Fig. 2 is a vertical
25 transverse section on line $x x$, Fig. 1. Fig. 3 is a detail view of the connection of the revoluble take-up-carrying frame to the horizontal gear-wheel, which is attached to and drives the needle-cylinder. Fig. 4 is a horizontal
30 transverse section on line $y y$, Fig. 1. Fig. 5 is an inverted plan view, partly broken away, of the lower end of the revoluble frame, showing the adjustable attachment of the pinions which transmit motion from the sta-
35 tionary gear to one of the take-up rollers. Fig. 6 is a top view of the aforesaid attachment of the pinions. Fig. 7 is an enlarged vertical transverse section of the main portions of the revoluble take-up-carrying frame,
40 taken on line $z z$, Fig. 8; and Fig. 8 is an enlarged vertical sectional view on line $O O$, Fig. 7.

Similar letters of reference indicate corresponding parts.

45 A represents the needle-cylinder, which is mounted to rotate on its supporting-frame F and receives motion from the horizontal driving gear-wheel B, which is rigidly secured to the base of the needle-cylinder in the usual
50 and well-known manner and as best seen in Fig. 2 of the drawings.

In the operation of knitting, the fabric

passes down through the tubular hubs of the needle-cylinder and of the wheel B, as indicated by dotted lines 1 1. In order automati- 55 cally to take up this fabric issuing from the needle-cylinder at a uniform speed corresponding to that of the knitting, we employ the following mechanism.

To the under side of the gear-wheel B we 60 rigidly secure the vertical frame C, the lower end of which is sustained laterally by a horizontal spider F', rigidly secured to the lower portion of the frame F and having firmly and rigidly secured to it the spur-wheel H, upon 65 the hub of which the base of the frame C rides and is pivotally secured to it by a bolt n , passing vertically through the spider and the aforesaid superimposed parts, as best seen in Fig. 2 of the drawings. 70

R denotes the take-up roller upon which the fabric is to be wound, said roller extending horizontally across the frame and is supported to yield vertically, preferably by means of prolonged spiral springs d'' , seated in ver- 75 tical tubes $d d$, secured to opposite sides of the frame, said tubes being slotted vertically at their upper ends for the reception of the trunnions of the roller R, said trunnions being mounted in journal-boxes e' , which are 80 mounted upon the upper ends of the spiral springs d'' . The vertical slots are extended through the upper ends of the tubes to allow the roller to be removed when desired.

In order to allow the aforesaid springs to 85 be adjusted in their tension, we close the lower ends of the tubes $d d$ and provide the bottoms of the tubes with screw-threaded eyes, in which are inserted set-screws $e e$, upon the inner ends of which rest the followers d' , on 90 which the spiral springs are mounted, as shown in Fig. 7 of the drawings.

R' represents an auxiliary take-up roller, which is arranged before the take-up roller proper R and parallel therewith and prefer- 95 ably fluted. Said auxiliary roller is journaled at opposite ends in the frame C, and has one end of its shaft projecting from the exterior of the frame C, and has loosely mounted on it a worm-pinion f , and to the outer side of 100 this pinion is fastened one of plates j of the friction-clutch. The other plate j' of said clutch is mounted to move longitudinally on the shaft, and is connected to it by spline

and groove, as shown at j'' in Fig. 7 of the drawings, and has secured to the side adjacent to the plate j a friction-disk k , of leather or other suitable material. The free end of the shaft of the roller R' is screw-threaded and provided with a set-nut m and jam-nut m' , and between the nut m and clutch-plate j' is interposed a spring-plate o , as clearly shown in Fig. 7 of the drawings. By turning the nut m so as to cause the spring o to press the clutch-plate j' tightly against the other clutch-plate j , the worm-pinion f becomes fastened to the shaft of the roller. Said pinion receives rotary motion from the worm g' on the upper end of a vertical shaft g , which is journaled in suitable bearings secured to the rotary frame C.

To the base of the frame C is fixed a horizontal arm C' , which projects from the side of the aforesaid frame, and has pivoted in its free end a short vertical shaft projecting from the top and bottom of the arm and having secured to opposite ends thereof two pinions i and i' . The lower pinion i meshes with the spur-wheel H and the upper pinion i' meshes with the pinion h , secured to the lower end of the shaft g .

Inasmuch as coarse-knitted fabric is produced faster than finely-knitted fabric, it is necessary to adjust the gearing so as to conform the motion of the take-up mechanism to the speed of the knitting, and to accomplish this we employ on the arm C' interchangeable pinions i and i' of different diameters, and in order to allow the said pinions to mesh with the spur-gear H and pinion h we connect the arm C' to the rotary frame C, so as to be adjustable longitudinally, by providing the said arm with a longitudinal slot p , through which pass the screws p' , which fasten said arm to the frame C, as shown in Fig. 5 of the drawings, and upon the said arm we mount adjustably in a similar manner the plate r , in which is stepped at t the vertical shaft g , as shown in Fig. 6 of the drawings.

Over the auxiliary take-up roller R' and parallel therewith is a companion auxiliary take-up roller R'' , also preferably fluted, and held yieldingly contiguous to the roller R' by the journal-boxes b of the roller R'' , seated movably in guideways a , formed on opposite sides of the frame C. In line with each of said guideways is a chamber a' , separated from the guideway by a partition a'' , which is perforated at its center, as shown in Fig. 8 of the drawings. The journal-box b is provided with a stem b' , which projects through the perforation of the partition a'' and longitudinally through the chamber a' , and is screw-threaded on its free end, and to said end is connected an adjusting-nut c , and between the inner end of this nut and the partition a'' is a spiral spring c' , surrounding the stem b' and exerting an outward pressure on the nut c , and thereby drawing the roller R'' toward the roller R' .

In the operation of the machine the fabric

passes between the two rollers R'' and R' , and after the lower end of the fabric has been once wrapped around the roller R the top portion of the wound-up fabric is pressed against the fluted roller R' by the action of the springs d'' forcing the roller R upward or toward the roller R' . The frame C, rotating synchronously with the needle-cylinder A and with the fabric issuing therefrom, maintains the take-up rollers R , R' , and R'' constantly in proper positions in relation to the needle-cylinder and the travel of the fabric from said cylinder. The roller R' receives rotary motion from the spur-gear H by means of the vertical shaft g and its geared connections with the said spur-wheel and shaft of the roller R , as hereinbefore described. The pressure of the roller R' upon the fabric passing between it and each of the other two rollers R and R'' imparts rotary motion to the latter rollers, and thereby passes the fabric to the take-up roller R and winds it upon the same.

In the operation of first applying the fabric to the roller R the nuts m m' are to be loosened to relieve the clutch member j from the pressure of the member j' , the pinion f being then permitted to rotate freely on the shaft of the roller R' , and the said roller can be turned by hand without turning the shaft g . To facilitate the turning of said roller by hand, a hand-wheel t is attached to the opposite end of said roller, as shown in Fig. 1 of the drawings. After the fabric has been wound once around the roller R the nuts m m' are to be tightened on the shaft of the roller R' , so as to lock the pinion f on the shaft by the clutch j and j' . The rollers R , R' , and R'' are then turned with the motion of the needle-cylinder, and the fabric is wound automatically on the roller R .

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In combination with the needle-cylinder, the frame C, rotating with said cylinder and provided with guideways a , chambers a' , and perforated partitions a'' between them, the auxiliary take-up roller R' , pivoted in said frame beneath said guideways, journal-boxes b , seated in the guideways, the roller R'' , journaled in said boxes, stems b' , extending from the boxes through the partitions a'' and chambers a' and screw-threaded on the free ends, adjusting-nuts c on said stems, and springs c' between said nuts and partitions and yieldingly forcing the roller R'' toward the roller R' , substantially as described and shown.

2. In combination with the frame F, needle-cylinder A, and gear-wheel B, attached to said cylinder, the spider F', attached to the lower portion of the frame, the stationary spur-wheel H, secured to the spider, the frame C, mounted revolubly on the said spur-wheel and rigidly secured to the gear-wheel B, the auxiliary take-up roller R' , journaled hori-

zontally in the frame C, the gear *f* on the shaft of the said roller, the vertical shaft *g*, having the gear *g'*, meshing with the gear *f*, the pinion *h*, secured to the lower end of the vertical shaft, gears transmitting motion from the spur-wheel H to the pinion *h*, the roller R'', sustained contiguous to the roller R', and the take-up roller R, sustained to yield vertically under the roller R', substantially as set forth.

3. In combination with the needle-cylinder and its supporting-frame, the frame C, rotating with the needle-cylinder, the take-up roller R, supported to yield vertically on the frame C, the spur-wheel H, secured stationary at the base of the frame C, the roller R', journaled in said frame above the roller R, the gear *f*, mounted loosely on the shaft of the roller R' and having a clutch member, a second clutch member adapted to lock and unlock the gear *f* to and from its shaft, the vertical shaft *g*, having on its upper end the gear *g'*, meshing with the gear *f*, the pinion *h*, fixed to the lower end of the shaft *g*, and intermediate pinions *i* and *i'*, transmitting motion from the spur-wheel H to the pinion *h*, substantially as described.

4. In combination with the stationary spur-wheel H, rotary frame C, vertical shaft *g*, and

pinion *h* on said shaft, the arm C' longitudinally adjustable on the said frame, a shaft extending vertically through the free end of said arm, interchangeable pinions *i i'* on the two ends of the latter shaft, and the plate *r* longitudinally adjustable on the arm C' and provided with the step for the shaft *g*, substantially as described and shown.

5. In combination with the frame C, the roller R', journaled in said frame and having its shaft projecting from the exterior of the said frame and screw-threaded on its end, the pinion *f*, mounted loosely on said shaft, the plate *j*, fastened to the side of said pinion, the friction-plate *j'*, mounted movably on the shaft and connected to it by spline and groove, the friction-plate *k*, interposed between the plates *j j'*, the adjusting-nut *m* on the shaft, and the spring O, interposed between the nut and plate *j'*, substantially as described and shown.

In testimony whereof we have hereunto signed our names this 13th day of June, 1891.

WALLACE HOSE. [L. S.]
HENRY CURTIN. [L. S.]

Witnesses:

ALBERT M. MILLS,
RICHARD HURLEY.