

No. 771,783.

PATENTED OCT. 4, 1904.

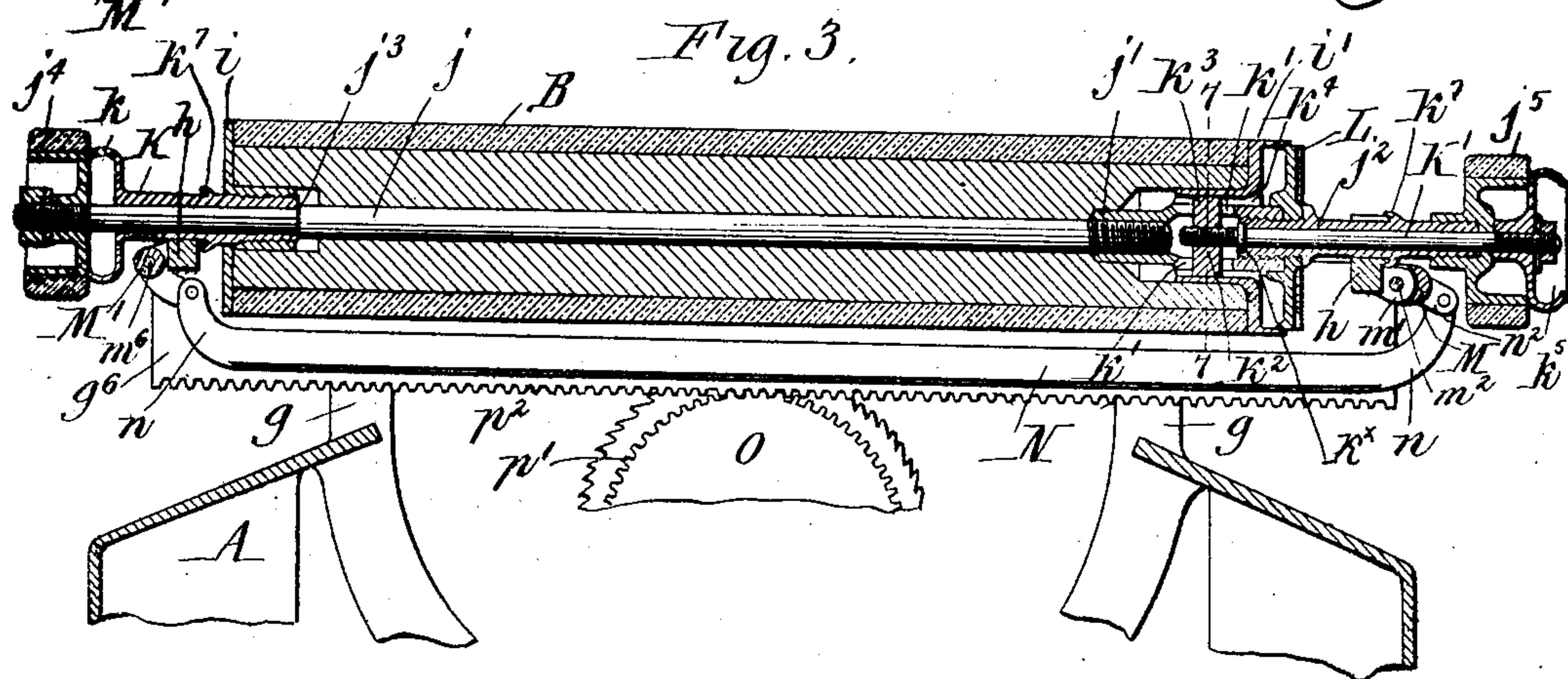
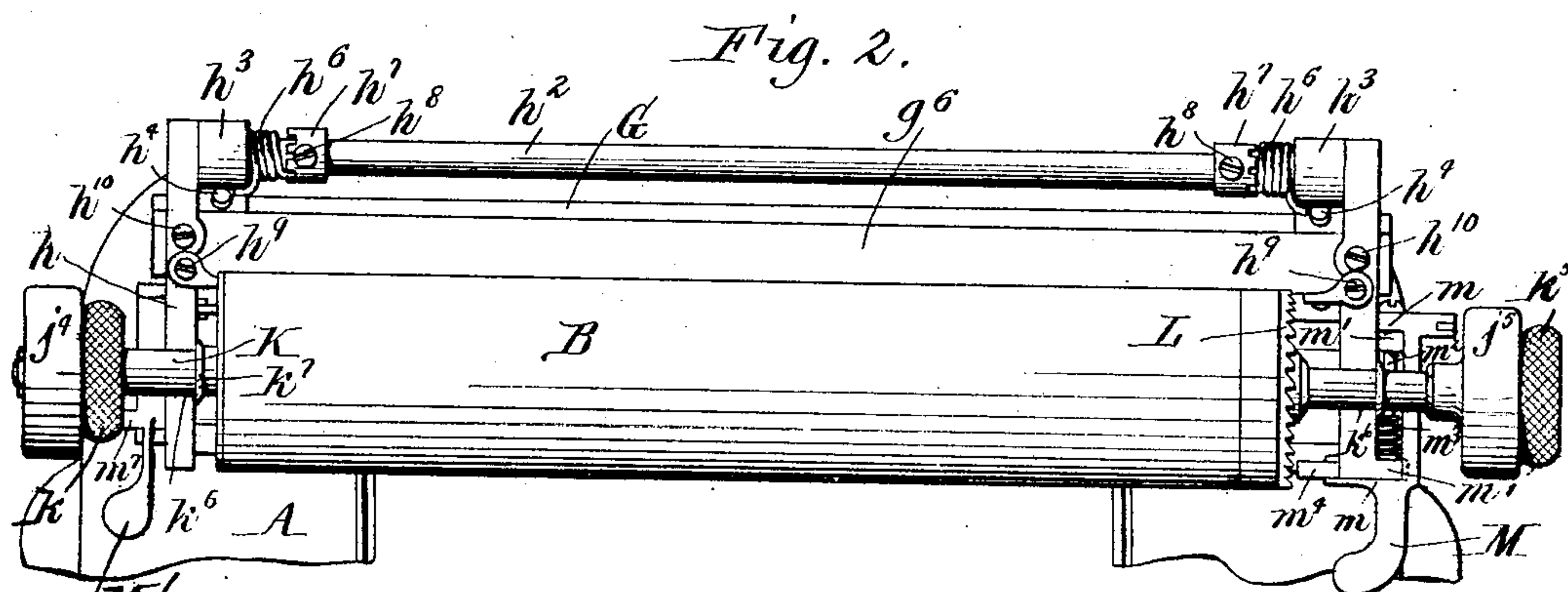
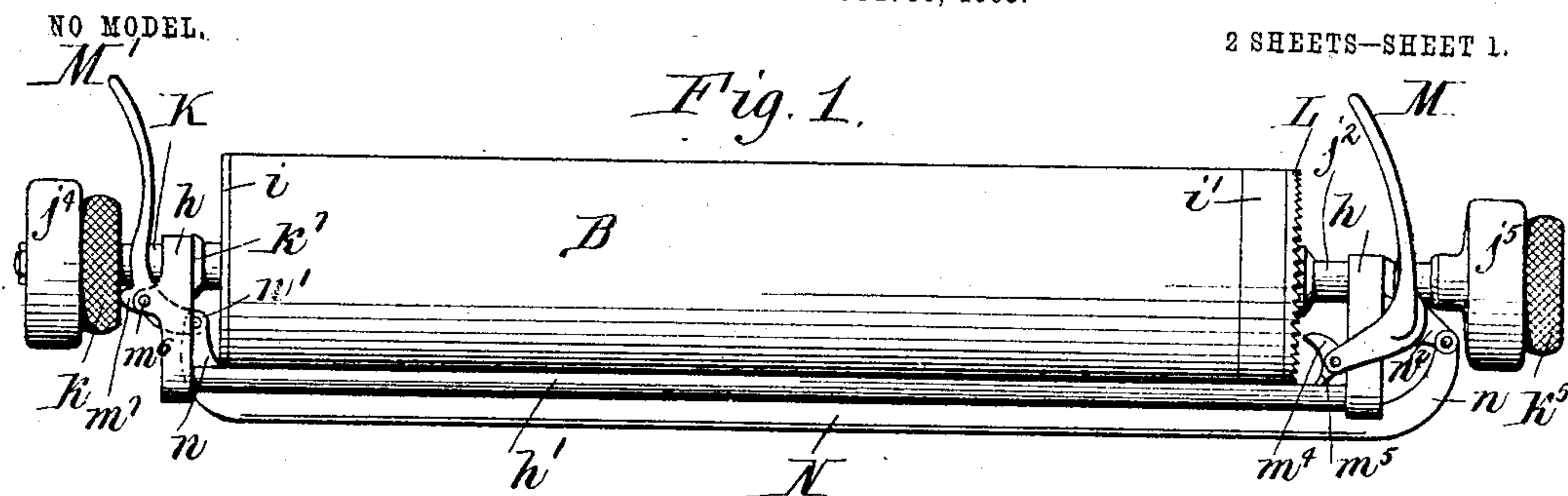
E. G. LATTA.

TYPE WRITER CARRIAGE AND BEARING THEREFOR.

APPLICATION FILED OCT. 30, 1903.

NO MODEL.

2 SHEETS--SHEET 1.



Witnesses:

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E. A. Volk.

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Attorneys:

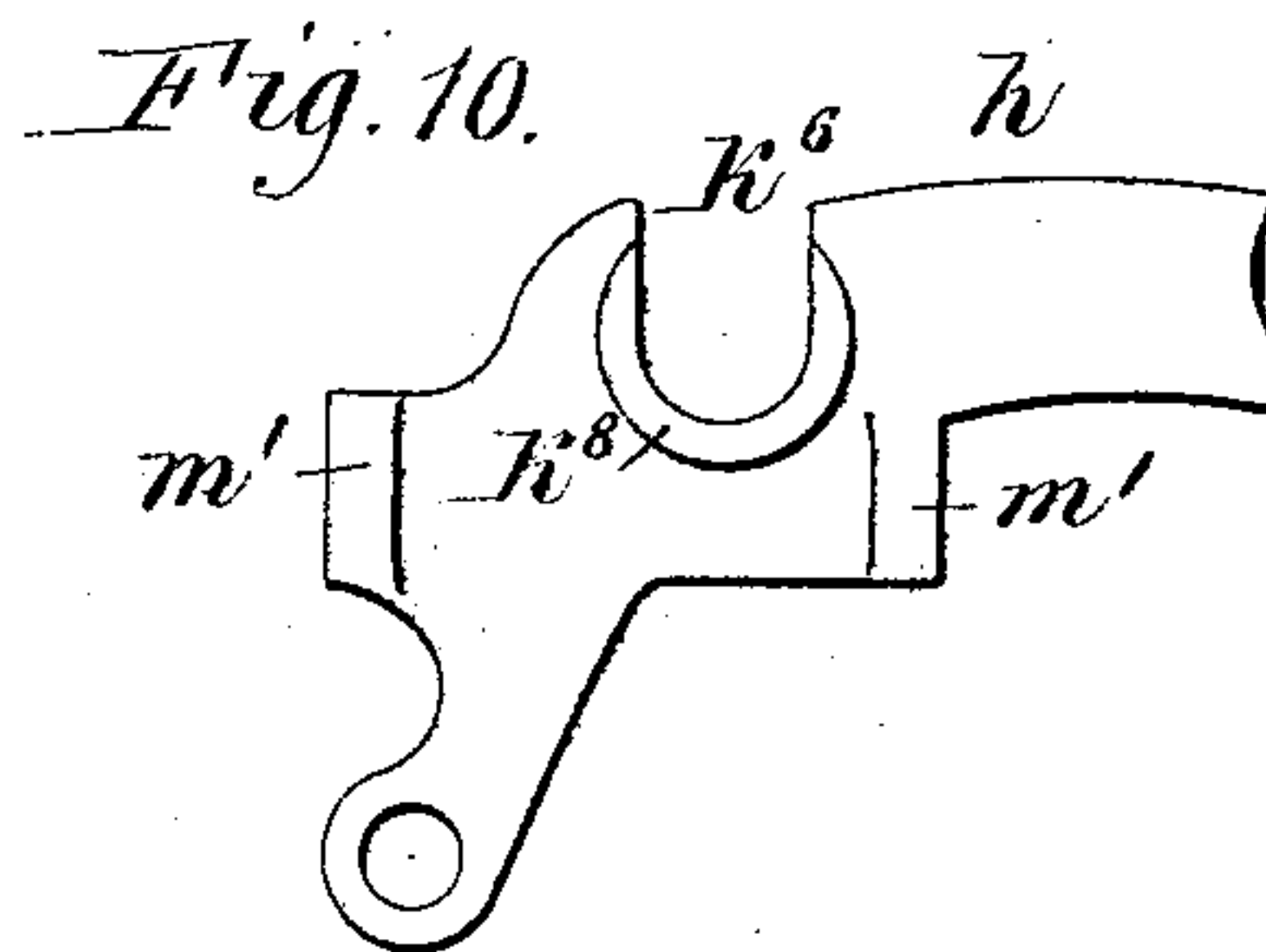
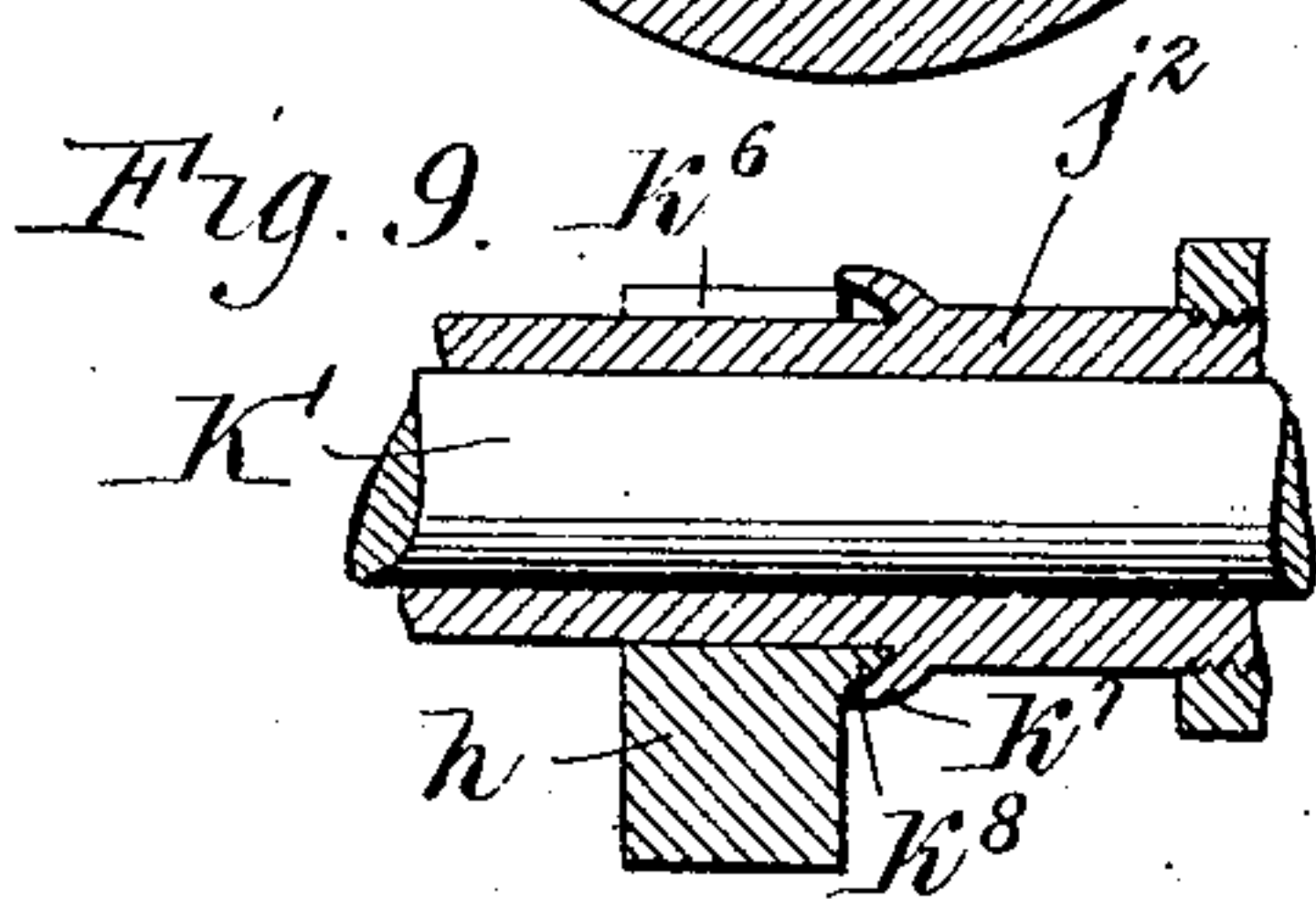
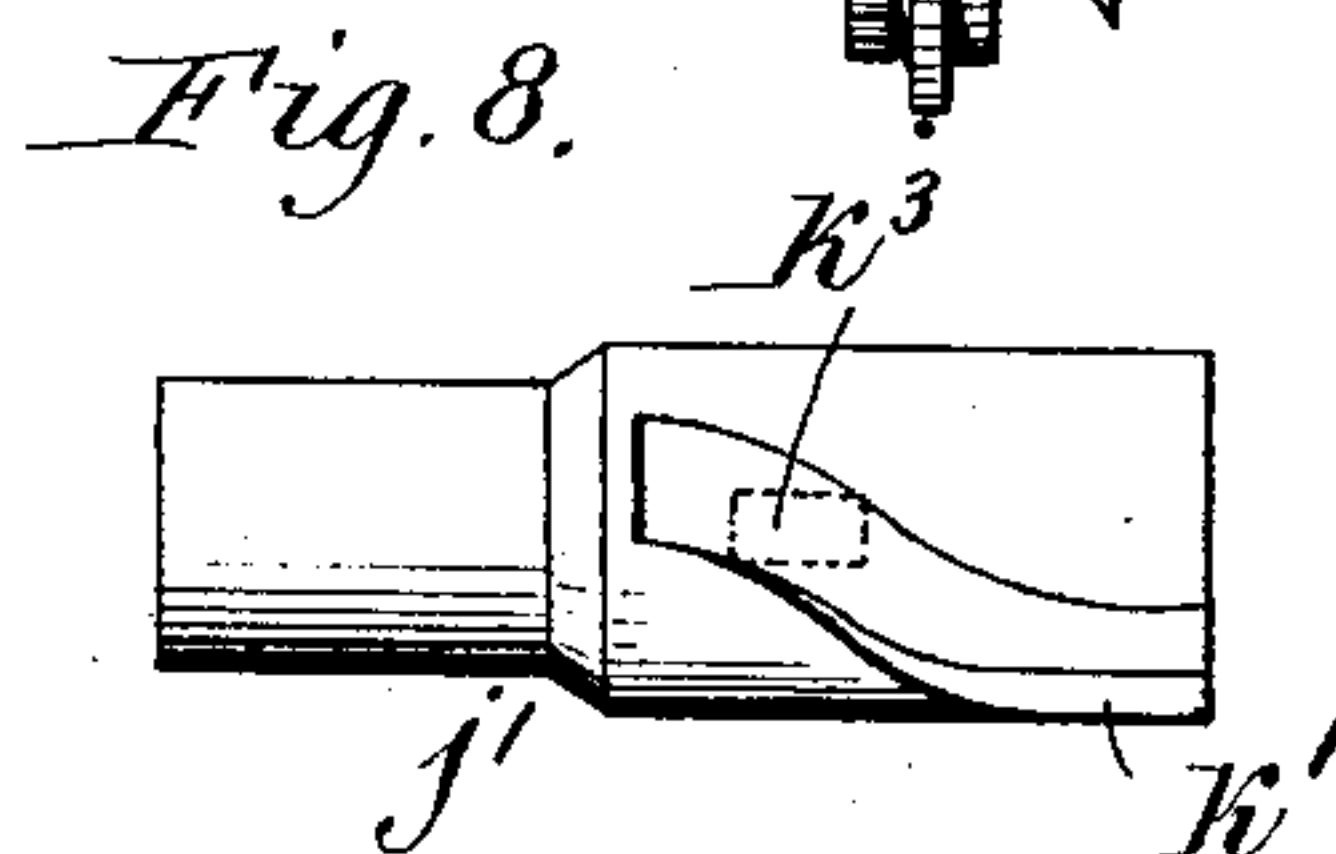
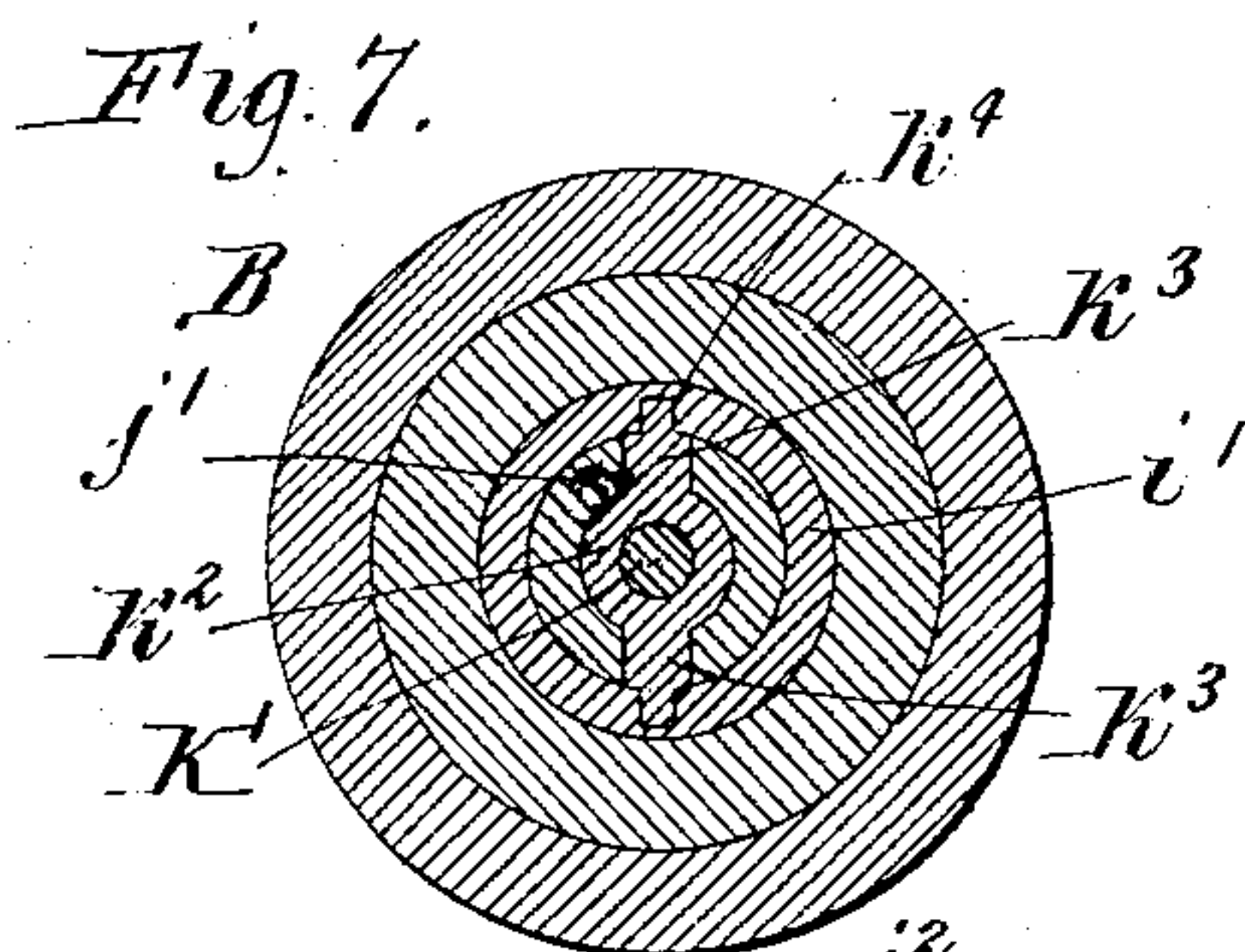
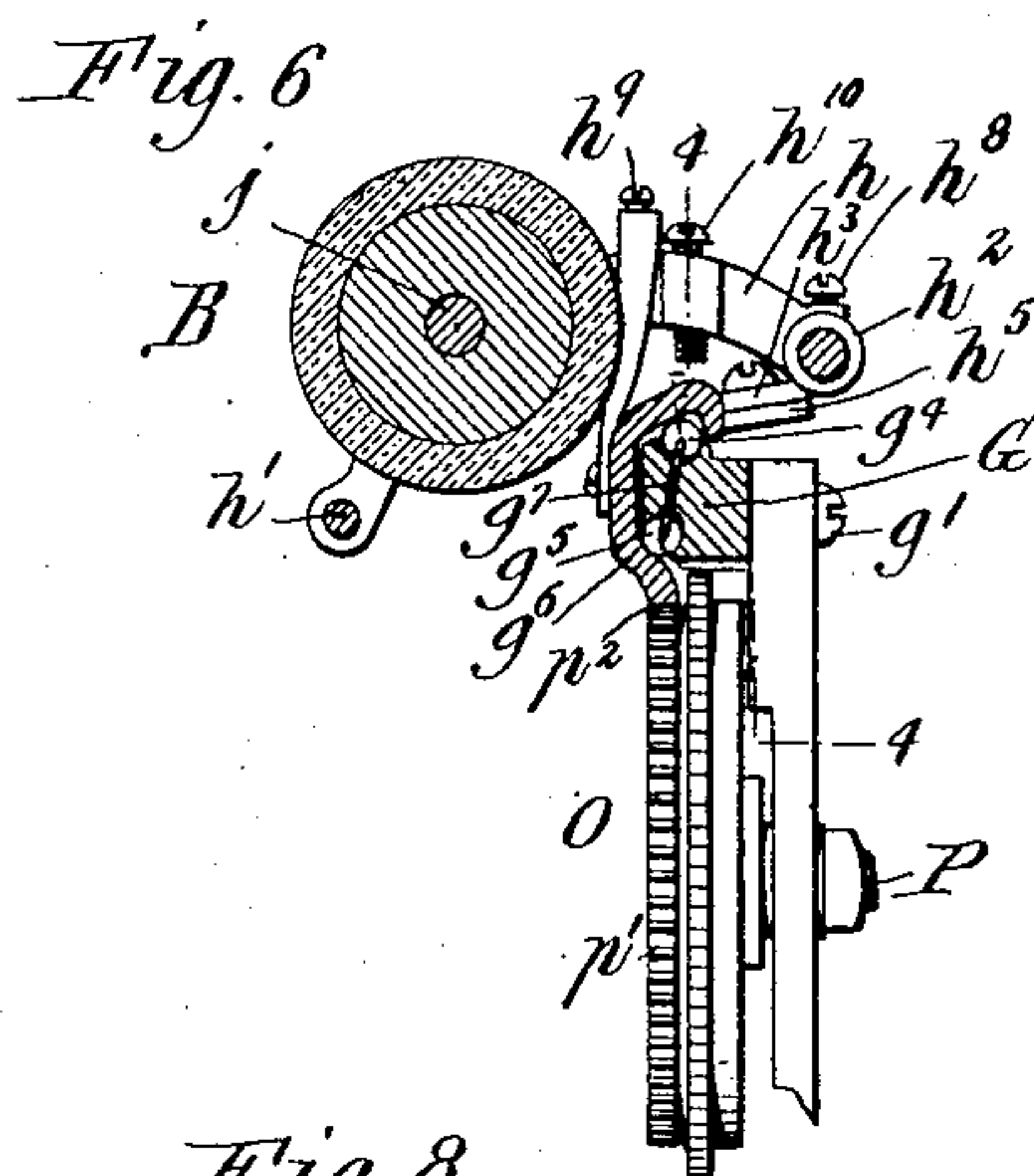
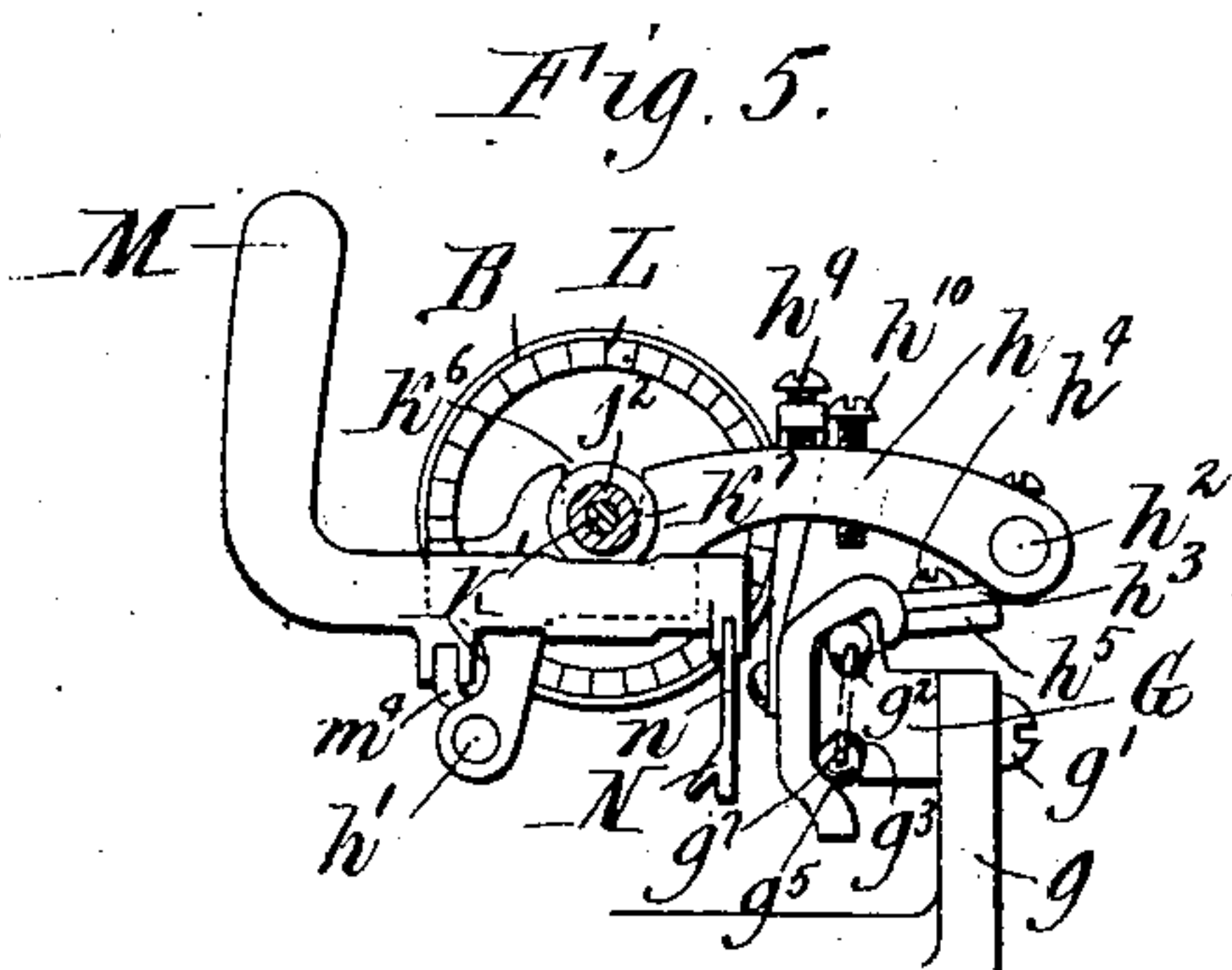
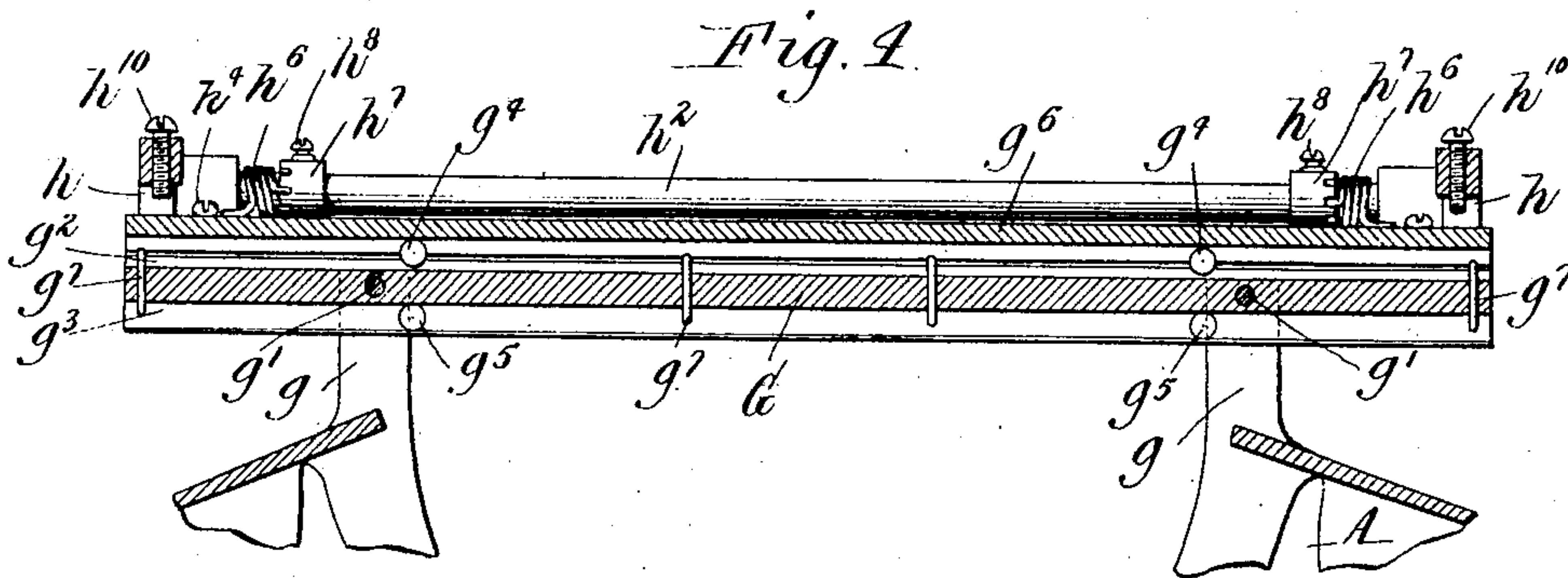
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APPLICATION FILED OCT. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:

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E. A. Volk.

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UNITED STATES PATENT OFFICE.

EMMIT G. LATTA, OF FRIENDSHIP, NEW YORK.

TYPE-WRITER CARRIAGE AND BEARING THEREFOR.

SPECIFICATION forming part of Letters Patent No. 771,783, dated October 4, 1904.

Original application filed August 4, 1903, Serial No. 168,190. Divided and this application filed October 30, 1903. Serial No. 179,119. (No model.)

To all whom it may concern:

Be it known that I, EMMIT G. LATTA, a citizen of the United States, residing at Friendship, in the county of Allegany and State of New York, have invented new and useful Improvements in Type-Writer Carriages and Bearings Therefor, of which the following is a specification.

This invention relates to the construction of carriages for type-writing machines and the supporting-bearings upon which the same are movable transversely of the machine to produce the spacing of the characters in the line, and more especially to front-strike or visible writing-machines of the character disclosed in my application for United States Letters Patent, Serial No. 168,190, filed August 4, 1903, of which this case is a division. The improvements are, however, applicable to other forms of type-writing machines.

One object of the invention is to provide a self-adjusting ball-bearing support for the carriage of simple, durable, and inexpensive construction.

Another object of the invention is to provide means for adjusting the platen laterally and circumferentially independently of the ordinary lateral and rotary movement thereof to place any desired point on the paper bearing written upon precisely at the printing-point and to provide means for readily attaching the platen to and detaching it from the carriage.

In the accompanying drawings, consisting of two sheets, Figure 1 is a front elevation of a type-writing machine carriage embodying the invention. Fig. 2 is a plan view thereof, showing a portion of the main frame of the machine. Fig. 3 is vertical longitudinal section of the carriage and a portion of the main frame. Fig. 4 is a vertical longitudinal section of the carriage and supporting-bearing therefor in line 4 4, Fig. 6. Fig. 5 is a fragmentary end elevation, partly in section, of the carriage and its bearing. Fig. 6 is fragmentary transverse vertical section of the carriage and bearing and showing the spring-operating drum for the carriage. Fig. 7 is a transverse section of the platen, on an en-

larged scale, in line 7 7, Fig. 3. Fig. 8 is a detailed view, on an enlarged scale, of the intermediate platen-shaft section. Fig. 9 is a fragmentary section, on an enlarged scale, of the detachable bearing for the platen-shaft. Fig. 10 is a fragmentary elevation, on an enlarged scale, of one of the end bars of the carriage.

Like letters of reference refer to like parts in the several figures.

The main frame of the machine upon which the carriage is mounted and only the rear portion A of which is shown may be of any suitable construction.

The platen B, as usual, is supported by a carriage which is movable laterally or crosswise of the machine. The carriage is supported and movable on a stationary horizontal supporting rail or track G, Figs. 1 and 3, which extends across the rear portion of the main frame and is secured to upright lugs *g* thereon by screws *g'* or otherwise. The track is of angular cross-section, having a groove *g²* in the front portion of its top side, which forms a ball-race, and a groove *g³* in its lower front edge or portion, forming a lower ball-race.

g⁴ g⁵, Figs. 4, 5, and 6, represent two sets of bearing-balls arranged, respectively, in the upper and lower ball-races. The lower race is planed out, as shown in Figs. 5 and 6, so as to retain the balls therein, while at the same time exposing the balls at the front of the track. The balls are inserted in the lower race through the ends thereof. The upper ball-race is preferably open wide enough to admit the balls at any point.

g⁶ represents a horizontal sliding bearing bar or rail for the carriage. This bearing-bar is preferably made in the form shown in Figs. 5 and 6 of sheet metal, having its rear side ground to form a wide rearwardly-opening groove of the shape shown. The upper portion of the bearing-bar overhangs the track and incloses and bears on the upper set of balls. The lower portion of the rear face of the bearing-bar is plain and bears against the exposed portions of the lower set of balls. The balls of the upper set have a four-point bearing—that is, two points of contact with

the track and two with the bearing-bar—while the balls of the lower set have a three-point bearing, or two points of contact with the track and one with the bearing-bar. Two balls are preferably employed in each race and run between four stop-pins g^7 , which extend through the track into the two races. The pins g^7 at the ends of the track prevent the escape of the balls from the races. Nearly the entire carriage extends forwardly from the bearing-bar and nearly its entire weight is in front of the ball-bearings. The upper set of bearing-balls forms, in effect, a pivot on which the carriage is hung, while the lower set of balls form an antifriction-stop to limit the downward swing of the carriage, the two sets of balls forming a guide on which the carriage moves from side to side with great freedom and exactness. The carriage therefore automatically adjusts itself to the wear in the parts of the supporting-bearing. It is important that the upper grooves in both the track-bar and slide-rail be of such shape that the balls come in contact with both of said grooves at points in front and in rear of the vertical center of the balls to prevent backward movement of the platen from the impact of the type-bars at the front side thereof when used in a front-strike type-writing machine.

The carriage proper consists of four parts or two end pieces or bars h and front and rear transverse horizontal connecting rods or bars h' h^2 , which are preferably round steel rods. The rear rod h^2 passes loosely through bearing-brackets h^3 , secured by screws h^4 or otherwise to ears h^5 , which project rearwardly from the end portions of the sliding bearing-bar. The carriage is adapted for use in machines in which each type-bar is provided with two characters, or upper and lower case characters, and it is shifted downwardly from its normal position to carry the printing-point opposite to the printing position of the upper-case type. To enable this swinging movement of the carriage, the rear transverse rod of the carriage is capable of turning in its supporting-bearings.

h^6 , Figs. 2 and 4, represents springs which are coiled around the rear rod of the carriage, each having one end hooked over the adjacent bearing-bracket and the other end inserted in one of a series of holes in a collar h^7 , which surrounds the rear rod of the carriage and is adjustably held thereon by a set-screw h^8 . The openings in the adjustable collars h^7 for the springs enable the ends of the springs to be engaged in the proper openings to leave the securing-screws for the collars in a favorable position to receive a screw-driver to secure the collars when turned to properly tension the springs. These springs act to normally hold the carriage up in the position shown in full lines, but permit the carriage to be moved downwardly against the tension of the springs by a shifting lever or device

(not shown) when it is desired to print upper-case characters. The upward movement of the carriage by the springs is limited by suitable stops, such as the adjustable screws h^9 , Figs. 5 and 6, which are carried by brackets secured to the bearing-rail and are adapted to strike the end pieces of the carriage, and the downward movement of the carriage is limited by adjustable stops, such as screws h^{10} , which pass through threaded holes in the side bars of the carriage and are adapted to strike the top of the bearing-bar.

The platen B is preferably constructed, as usual, of a wooden core and a hard-rubber cover and is provided at its opposite ends with fixed metal bearing-plates i i' , having inwardly-extending sleeves or bearings for centering and supporting the platen on its central shaft. The latter (see Fig. 3) consists of three separate connected parts or sections j j' j^2 and is journaled on the end bars of the carriage, as hereinafter explained. The end section j of the shaft is a plain steel rod threaded at its inner end and screwed into an internal thread in one end of the intermediate shaft-section j' , which is hollow, and is provided at its other end with an internal screw-thread which receives the threaded inner end of the other end section, j^2 , which is tubular. The outer end of the shaft-section j , which is preferably reduced and provided with a shoulder j^3 , has a knob j^4 screwed on its outer end or secured thereon in any suitable manner. j^5 represents a similar knob screwed on the section j^2 at the other end of the shaft or otherwise secured thereto. These knobs enable the platen to be turned from either end in the usual manner.

K represents an adjusting-sleeve which surrounds the reduced end of the end shaft-section j , between the shoulder thereon and the knob j^4 . The inner end of the adjusting-sleeve K is threaded and screwed into the internally-threaded sleeve of the bearing-plate i at the adjacent end of the platen, and the outer end of the adjusting-sleeve is enlarged or provided with a head k , by which the sleeve may be turned to screw it into or out of the threaded hole of the bearing-plate i . The adjusting-sleeve is held from longitudinal movement on the shaft-section j between the knob j^4 , at the outer end thereof, and the shoulder j^3 , but is free to turn on the shaft-section and when turned acts to move the platen longitudinally along the shaft. The intermediate section j' of the shaft is hollow and passes loosely through the bearing-sleeve of the bearing-plate i' at the adjacent end of the platen and is provided at diametrically opposite sides with helical slots or cam-faces k' , Fig. 8.

k^2 is a slide or nut which is confined in the intermediate shaft-section j' and is provided with oppositely-projecting arms k^3 , Fig. 7, which extend out through the helical slots in said intermediate shaft-section and engage in

longitudinal internal grooves k^4 in the bearing-sleeve of the end plate i' .

K' represents a spindle which is rotatably mounted in the hollow end shaft-section j^2 and is provided at its inner end with a screw-threaded portion engaging in a threaded hole in the slide-nut k^2 . The spindle is provided with a collar k^x , which bears against the inner end of the end shaft-section j^2 and has at its outer end an enlarged head or knob k^5 , formed on or secured to the spindle in any suitable manner and bearing against the knob j^5 , secured to the end shaft-section j^2 . The spindle is held from longitudinal movement by its collar and enlarged head, and the latter serves as a handle or knob for turning the spindle. By turning the spindle the slide or nut k^2 is moved longitudinally in the intermediate shaft-section and its arms engaging in the helical slots in the shaft-section j^2 and the longitudinal slots in the bearing-sleeve of the end plate cause the platen to turn about or relative to the shaft, thus enabling the platen to be turned on the shaft to locate any desired point on its surface or the paper thereon directly at the printing-point. In practice the platen is turned by the line-space lever or the knobs j^4 j^5 at its opposite ends to the nearest regulated line-space and moved laterally with the carriage to the nearest letter-space. The adjusting-sleeve and spindle at the opposite ends of the platen are then operated to produce the exact adjustment of the platen and paper necessary to enable the type to strike the desired point on the paper. The regular line and letter space mechanism moves the platen in the usual manner from the position in which it is left by these special adjustments, and the effect is that after adjusting the platen by either of the adjusting devices the type will strike on new portions of its surface, thus greatly increasing the life of the platen and distributing the wear over its entire surface.

The end section j^2 of the platen-shaft and the adjusting-sleeve K at the opposite end of the platen rest in open bearing-sockets k^6 , Figs. 2, 9, and 10, in the end pieces of the carriage and are provided with conically-grooved flanges k^7 , Fig. 9, which encircle semicircular conical lips k^8 , Figs. 9 and 10, projecting in the same direction from the two end pieces of the carriage around the lower portions of the bearing-seats. The interlocking flanges and lips hold the shaft in its bearing-seats; but the shaft and platen can be readily detached from the carriage by moving it endwise to discharge the collars and flanges. The platen is held against endwise movement to prevent accidental detachment of the platen by means hereinafter described.

The platen is turned to produce ordinary line-spaces or feed the paper by the following mechanism: L , Figs. 2 and 5, represents a ratchet wheel or plate which is arranged at

one end of the platen, preferably the right end, and is screwed on the end shaft-section j^2 , being clamped in place between a fixed collar on the shaft-section j^2 and the outer end of the intermediate shaft-section j' . The ratchet-plate is provided near its outer edge with ratchet-teeth l and is provided with an annular flange l' , which is surrounded by an outwardly-projecting annular flange l^2 on the adjacent end plate of the platen, said flanges serving to close the space between the end plate and the ratchet-plate. The ratchet-plate is indirectly connected with the platen through the shaft-sections j^2 j' and the adjusting-slide k^2 , so that the platen will turn with the ratchet-plate, but can be turned and moved laterally independently of the ratchet-plate by the adjusting devices before explained. M , Figs. 1 and 2, represents the regular line-space or paper-feed lever for turning the platen. The lever is located at the right end of the carriage and has a rearward extension passing under the platen shaft-section j^2 and provided with two fixed or integral arms m , which are pivoted to lugs m' , projecting from the adjacent side piece of the carriage, by a screw or pin m^2 . m^3 is a spring which surrounds the pivot-pin m^2 and is connected at its ends to the side piece of the carriage and line-space lever and acts to retain the lever in its normal position. The line-space lever is provided at its front end with an arm which projects toward the ratchet-plate and carries a pivoted pawl m^4 , Fig. 1, the upper free end of which is adapted to engage with the ratchet-teeth to turn the platen. The pawl m^4 is provided with a depending arm or portion m^5 , which rests in the normal position of the lever on the adjacent portion of the front transverse rod of the carriage and acts as a stop for the lever and also to hold the pawl out of engagement with the teeth of the ratchet-plate. When the lever is operated, the first portion of its movement lifts the pawl off of the carriage-rod and its free end falls into engagement with one of the teeth of the ratchet-plate, which latter is turned by the further movement of the lever. The extent of rotary movement of the ratchet-plate and platen is determined by the usual adjustable stop, (not shown,) and the platen is held against rearward rotation by a detent or other usual device. (Not shown.) M' , Figs. 1 and 2, represents a lever arranged at the opposite end of the carriage and pivoted thereto by a suitable screw or pin m^6 . The lever M' is provided with a lug or projection m^7 , Fig. 1, which in the normal position of the lever bears against the head of the platen-adjusting sleeve K and holds the platen from endwise movement, thereby preventing the detachment of the platen-shaft from its bearings. When the lever M' is swung to the right, the projection m^7 is carried away from the head of the adjusting-sleeve and the platen

can be moved longitudinally and detached from its bearings. N, Figs. 1 and 3, is a bar which is arranged longitudinally beneath the platen and is provided with upturned ends n , which are pivoted to arms n' n'' on the line-space levers M M', respectively. This bar connects the two levers, so that when the lever M' at the left end of the carriage is operated power is transmitted therefrom to the other lever M at the right end of the carriage, and the platen is turned by the pawl and ratchet-plate, as above described. The two levers and their connecting-rod thus afford means for turning the platen from either end thereof.

The platen, with its auxiliary adjusting devices, is self-contained or complete without other connection to the carriage than the shaft by which it is supported and the line-space wheel by which it is actuated for the regular line-space work. The interchangeable hard platen for manifolding does not require the auxiliary line-space adjustment, as these several sheets when used protect the platen from wear, and ruled lines are not followed in that kind of work, and when such hard platen is in use there are no parts of the auxiliary feeding devices left on the carriage, as is the case with carriages heretofore made with auxiliary adjusting devices.

O, Fig. 6, represents the carriage-driving drum or barrel, which is journaled beneath the carriage-supporting track on a stud or axle P, projecting from the upright rear portion of the main frame. The drum incloses an ordinary spiral spring connected at its inner end to the supporting-axle and at its outer end to the drum or barrel in any suitable manner. The peripheral face of the drum is provided with gear-teeth p' , which mesh with a toothed rack p'' , formed on or secured to the lower edge of the sliding bearing-bar of the carriage. The spring tends to turn the drum to the left and move the carriage to the left, as usual. The driving-drum is operated to move the carriage step by step to produce the letter-spacing by an escapement mechanism which is described and claimed in my said application for patent.

I claim as my invention—

1. In a front-strike type-writing machine, the combination of a fixed transverse track-bar having a V-shaped groove in its upper side, and a groove in its lower front side opening forwardly, a series of balls in each groove, and a carriage having a sliding rail provided with a downwardly-opening groove covering the upper series of balls and pivotally supported by them, and resting against the front side of the lower series of balls, the two series of balls forming the only support for the carriage-rail and being held against transverse lateral movement in their grooves by the weight of the carriage-rail and platen, substantially as set forth.

2. In a front-strike type-writing machine, the combination with the platen and type-bars which strike on the front side of the platen, of a supporting slide-rail for the platen having an inverted-V groove in its upper part and a rearwardly-facing parallel bearing-surface below said groove, a transverse track-bar having an upwardly-facing V-groove in its upper side, and a forwardly-facing groove in its lower part, two sets of bearing-balls in said grooves in the track-bar acting to form the sole support of the slide-rail and platen and arranged as shown to resist the impact of the type-bars without displacement and to be retained in proper adjustment by the weight of the platen, substantially as set forth.

3. In a type-writing machine, the combination of a laterally-movable carriage, a fixed track-bar having an upwardly-opening wide-mouthed groove in its upper side, and a forwardly-opening groove having inturned edges in its lower portion, a set of balls in each groove, and a sliding rail supporting the carriage on both sets of balls and having a downwardly-opening groove inclosing the balls in the upper groove of the track-bar, said inturned edges of the lower ball-grooves serving to prevent the escape of the balls therefrom when said sliding rail is detached, substantially as set forth.

4. In a type-writing machine, the combination of a laterally-movable carriage, a fixed track-bar having an upwardly-opening wide-mouthed groove in its upper side, and a forwardly-opening groove in its lower portion, a set of balls in each groove and a sliding rail supporting the carriage on both sets of balls and having a downwardly-opening groove inclosing the balls in the upper groove of the track-bar, the lower groove being made with integral inturned edges to retain the balls and having end stops to prevent the balls from running out of the ends of the grooves, the two sets of balls forming one support for the carriage and being adjustable for wear by the weight of the carriage, substantially as set forth.

5. In a type-writing machine, the combination of a laterally-movable carriage, a single fixed track-bar having grooves in its upper side and lower portions, balls arranged in said grooves and having a two-point bearing in each groove, the two points of contact in the upper groove being each side of its vertical center, and a sliding rail having a groove forming a two-point bearing for the upper set of balls, and having a one-point bearing against the lower set of balls, the two sets of balls forming the only support for the carriage and being adjusted for wear by the weight of the carriage, substantially as set forth.

6. In a type-writing machine, the combination of a rotatable platen, a shaft therefor

having grooved collars at the ends of the platen, and a carriage having open seats or bearings for the shaft with semicircular projecting lips or flanges adapted to enter the grooved collars and retain the shaft in its seat, substantially as set forth.

7. In a type-writing machine, the combination of a rotatable platen, a shaft having grooved collars at the ends of the platen, a carriage having open seats or bearings for the shaft with semicircular projecting lips or flanges adapted to interlock with the grooved collars, and a movable stop acting to hold the parts in interlocked position, substantially as set forth.

8. In a type-writing machine, the combination of a rotatable platen and supporting-shaft for the same, a carriage having open bearing-seats for the shaft, a lever and connections for rotating the platen, and a stop on the lever acting normally to retain the shaft in its bearings, and to permit the same to be detached therefrom by turning the lever, substantially as set forth.

9. In a type-writing machine, the combination of a reciprocating carriage having journal-bearings for the shaft of a rotary platen, a platen having the usual line-space mechanism, a supporting platen-shaft, and auxiliary mechanism connecting the shaft to the platen independently of any connection with the carriage except the bearings for the platen and acting to both rotate the platen on the shaft and move it longitudinally thereon, substantially as set forth.

10. In a type-writing machine, the combination of a rotary platen, a supporting-shaft with which it normally rotates, and a screw-threaded rod working in the end of the shaft and acting to turn the platen on the shaft, substantially as set forth.

11. In a type-writing machine, the combination of a rotatable platen, a shaft with which

it normally rotates, and a knob having a rigidly - connected screw - threaded extension working inside of the shaft and acting to turn the platen on the shaft, substantially as set forth.

12. In a type-writing machine, the combination with a carriage, a rotary platen, its supporting-shaft and line-space mechanism, of auxiliary means for adjusting the platen both laterally and circumferentially relative to the line-space mechanism, such auxiliary means being self-contained or independent of the carriage and detachable therefrom with the platen and shaft, substantially as set forth.

13. In a type-writing machine, the combination of a platen, a supporting-shaft for the same, a screw at one end of the shaft acting to give the platen a limited rotary movement thereon, and a screw acting on the other end of the shaft to move the platen laterally on the shaft, substantially as set forth.

14. In a type-writing machine, the combination with a rotatable platen, and mechanism to feed the platen regular line and letter spaces, of auxiliary screw mechanism acting independently of the regular space mechanism to change the position of the platen with relation to both the regular line and letter space mechanism, substantially as set forth.

15. In a type-writing machine, the combination with a rotatable toothed wheel, and a platen normally moving therewith, both laterally and circumferentially, of adjustable connections whereby the platen may be rotated and moved laterally independently of the toothed wheel, substantially as set forth.

Witness my hand this 22d day of October, 1903.

EMMIT G. LATTA.

Witnesses:

H. L. BLOSSOM,
CHAS. J. RICE.