

R. J. GILMORE.

RING TRAVELER MACHINE.

No. 310,577.

Patented Jan. 13, 1885.

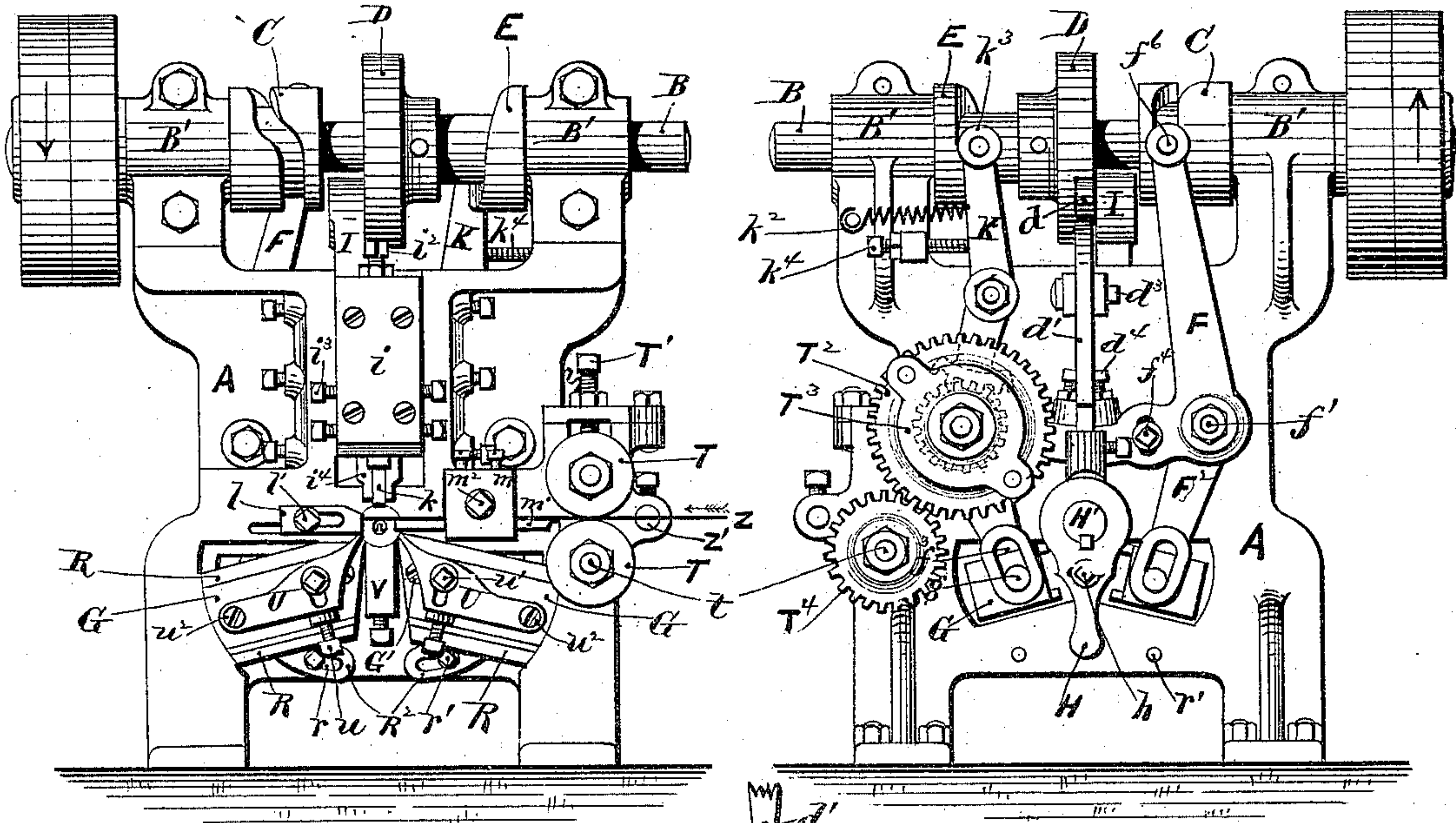


FIG. 11

FIG. 21

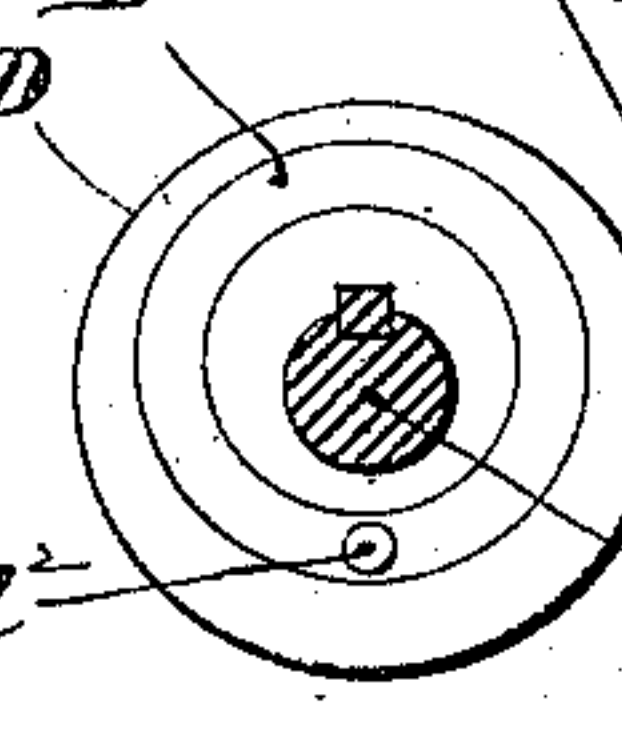
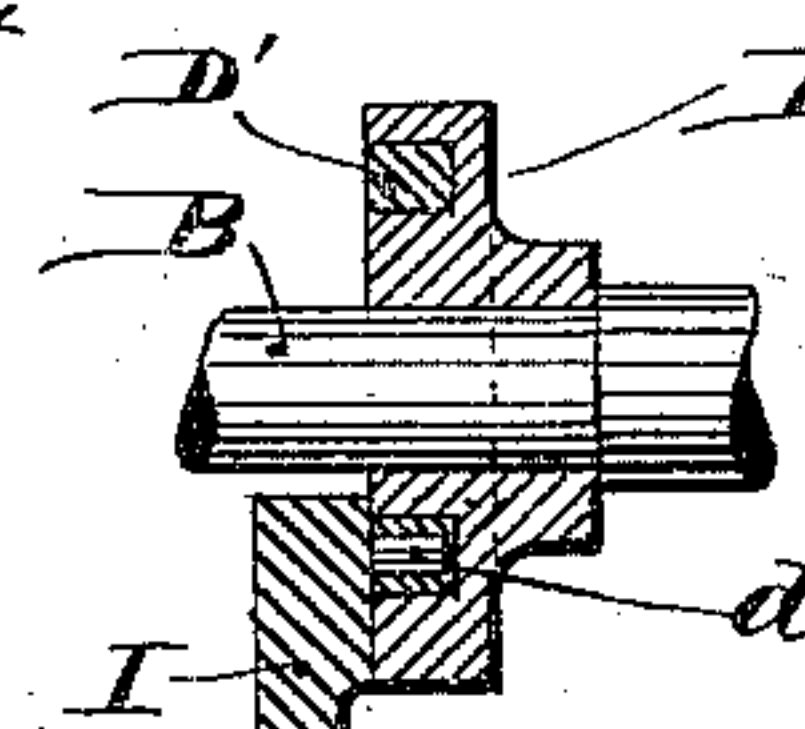
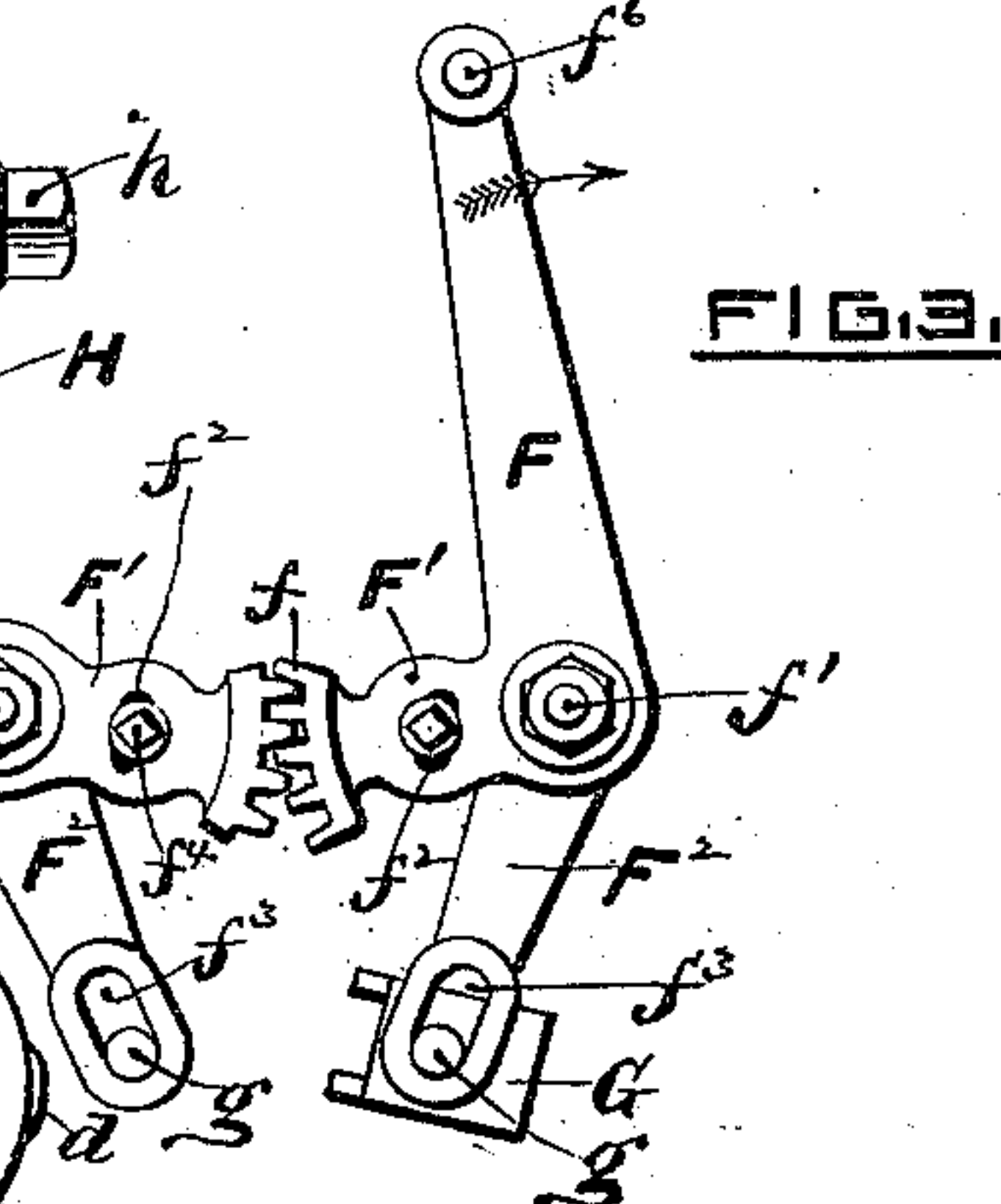
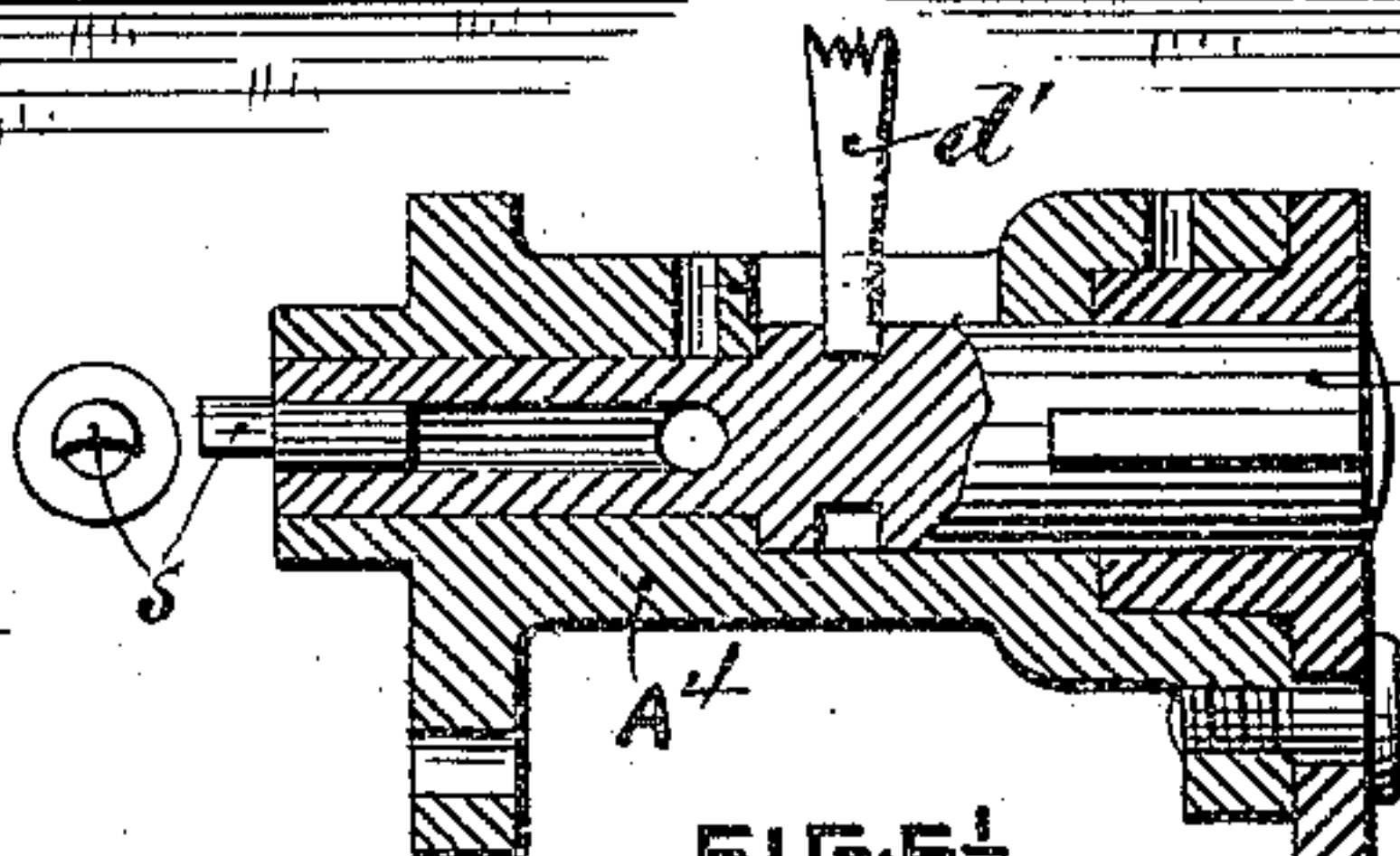
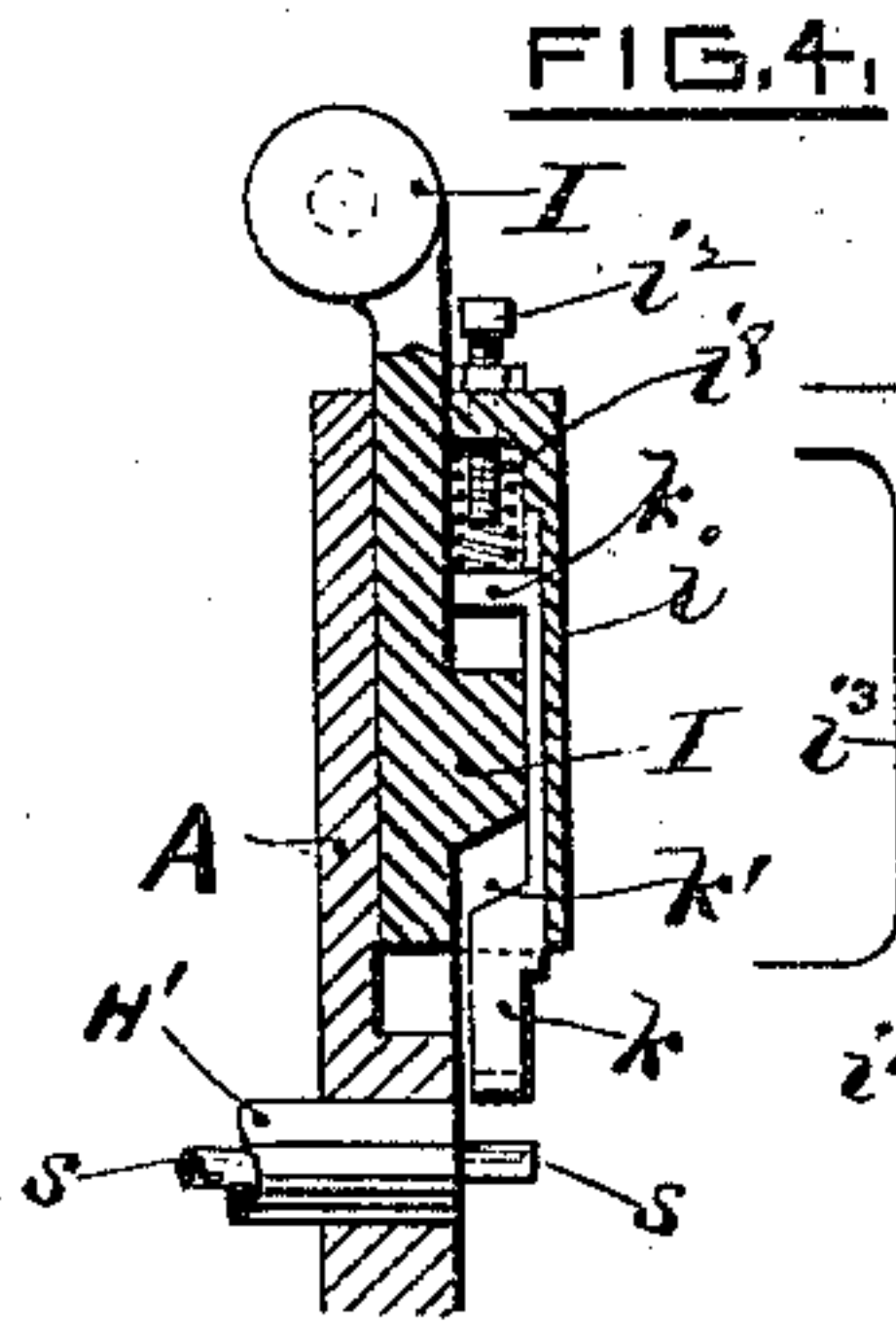


FIG. 51

FIG. 61

WITNESSES,



FIG. 81

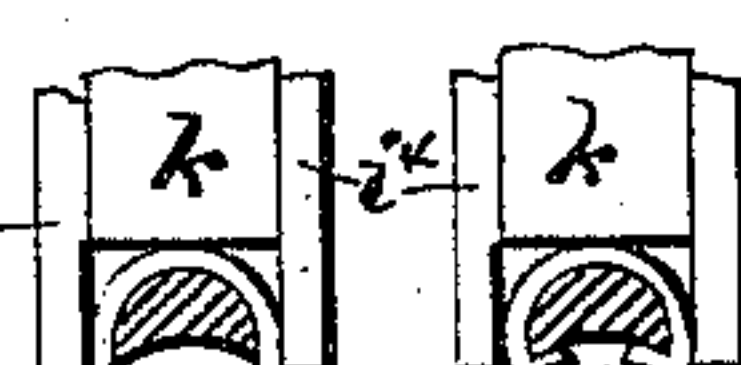


FIG. 91

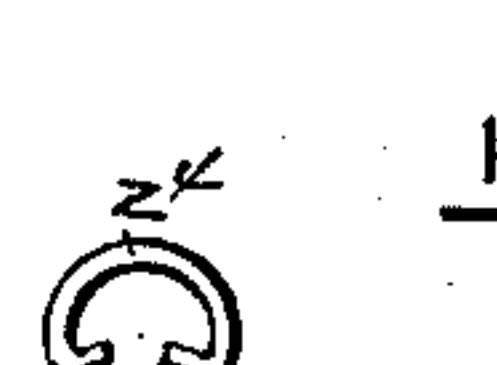


FIG. 111

INVENTOR,

Charles Hannigan.

Willis H. Heath.

FIG. 10

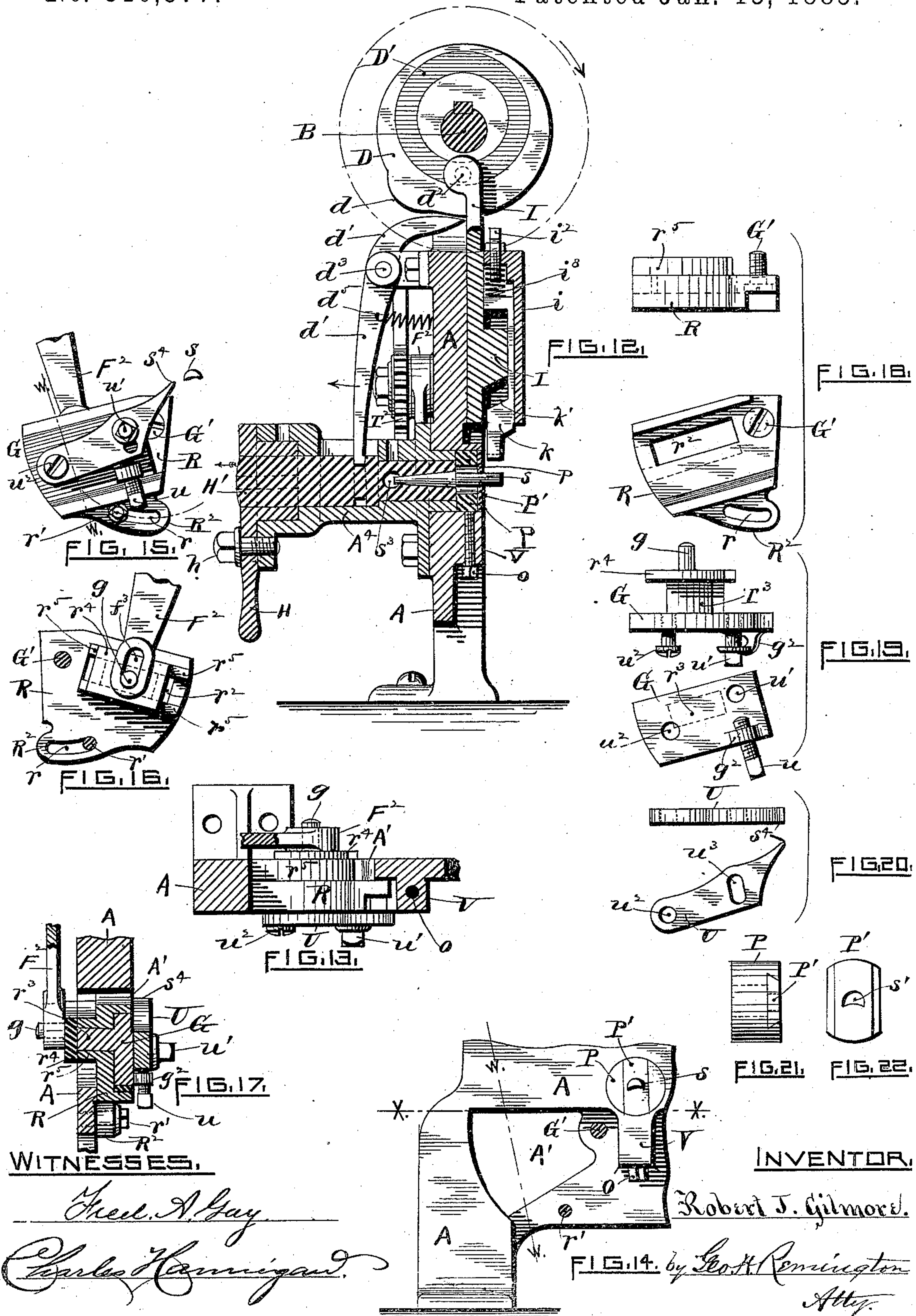
Robert J. Gilmore.

By *Geo. H. Remington*
Atty.

2 Sheets—Sheet 2.

RING TRAVELER MACHINE.

Patented Jan. 13, 1885.



UNITED STATES PATENT OFFICE.

ROBERT J. GILMORE, OF PROVIDENCE, RHODE ISLAND.

RING-TRAVELER MACHINE.

SPECIFICATION forming part of Letters Patent No. 310,577, dated January 13, 1885.

Application filed September 24, 1883. (No model.)

To all whom it may concern:

Be it known that I, ROBERT J. GILMORE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Ring-Traveler Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to machines for making ring-travelers or other analogous articles; and it consists, first, of two pivoted and adjustable shaping-formers, which receive simultaneous movement by means of toothed levers operated by a single cam secured to the driving-shaft, in combination with suitable feeding and cutting-off mechanism.

The invention consists, secondly, of an adjustable and yielding plunger, which rests against the traveler while it is being formed.

The invention consists, thirdly, of a horizontal arbor provided with means for intermittently moving the same endwise and means for adjusting the arbor radially, all as will be more fully hereinafter set forth.

The object of this invention is to provide a machine with means for producing ring-travelers in a better and more expeditious manner than has been done heretofore.

In the accompanying two sheets of drawings, Figure 1 represents a front elevation of the machine complete as in use. Fig. 2 is a rear view of the same. Fig. 3 is a detail view of the toothed levers which connect with the shaping-formers. Fig. 4 is a vertical section through the frame, plunger, and its plate. Said figure also includes a front view of the same without the plate. Fig. 5 is a vertical longitudinal section showing the crank device. Fig. 6 is an end view of the same. Fig. 6½ is an enlarged sectional view, showing the horizontal arbor and its bearing. Figs. 7, 8, 9, and 10 represent various forms the stock assumes during its formation into a ring-traveler. These views also show certain details of the forming parts and yielding plunger. Fig. 11 is a ring-traveler complete. Fig. 12

(Sheet 2,) is an enlarged vertical transverse section through the center of the machine. Fig. 13 is a partial horizontal sectional view. Fig. 14 is a partial view of the frame, showing one of the openings therein, within which one of the shaping-formers is located. Fig. 15 is a front view of one of the shaping-formers, &c. Fig. 16 is a rear view of the same. Fig. 17 is a cross-sectional view of the same through *w w*. Fig. 18 represents both front and top views of one of the holders. Fig. 19 represents front and top views of one of the blocks adapted to slide freely within the holder. Fig. 20 represents views of the steel formers. Fig. 21 is a top view, enlarged, of the bushing which carries the steel plate within which the center arbor is mounted; and Fig. 22 is a front view of the plate itself.

The following is a detailed description of the invention:

A, referring again to the drawings, designates the vertical frame of the machine, which is provided with bearings B' for the main driving-shaft B. At each side of the frame, near its lower edge, are formed openings A', Fig. 14, adapted to receive the holder for the movable formers, &c.

E, Figs. 1 and 2, represents a cam on the shaft B. This cam imparts intermittent motion to the lever K, and said lever like motion to the feed-rolls T T through the gear-train T² T³ T⁴.

k² is a spiral spring, having one end fixed to the frame, and the other end secured to the lever K. This spring holds said lever against the end of the set-screw k⁴. The object of this screw is to adjust and limit the length of stock—to form the traveler—fed along between the feed-rolls at each revolution. At the longest feed the friction-roll k³ may rest against the face of the cam E; but as the feed is shortened so relatively is the distance increased between the roll and the face of the cam, this distance being gaged by means of said screw k⁴. The segmental toothed arm of the lever K engages a gear-wheel, T³, (shown dotted,) which in turn is connected (by means of a pawl and ratchet, or otherwise, as common) with the larger gear-wheel T², the latter meshing into the wheel T⁴, secured to the shaft *t*, carrying at its opposite end the lower feed-roll T. The upper roll T is connected with the lower

feed-roll by means of the set-screw T' , which bears against a box carrying the upper roll-shaft, as common. The stock z is intermittently fed along between the rolls T by means of said cam E , lever K , and the gear-train $T^2 T^3 T^4$, before described. D is a disk secured to said shaft, having an eccentric groove formed upon its face, within which is loosely fitted the ring D' , adapted to connect with the plunger or cross-head I by means of the pin d' . The pin may be secured to the ring and fitted into the plunger. The eccentricity of the groove and ring corresponds to the throw or stroke required. I am enabled thereby to dispense with the link or other intermediate connection usually required in transmitting power from the crank to the plunger, &c., thus permitting the reduction of the height of the machine.

C is a cam secured to the shaft B for the purpose of giving suitable motion to the lever F , the latter having a toothed segment, F' . The lever F is fulcrumed at f' to the frame. The lower portion, F^2 , of said lever has an elongated opening, f^3 . A similar lever (without the arm F) is mounted upon the frame, and connected with its fellow just described by means of the cogs f , all as fully shown in Fig. 3.

s is the steel former, around which the stock z is bent to form the travelers z^4 , said former being secured within the arbor or spindle H' , as fully shown in Fig. 12. A bushing, P , having an enlarged center opening, p , is retained in position and secured to the frame A in front of the spindle H' by means of the screw o , passing up through the center projection or lug, V . A steel guide-plate, P' , is fitted into the face of the bushing, having a center opening corresponding in size to the former s . In changing the formers, the screw o is loosened, after which the bushing, with its plate, is removed, when, after inserting another or different-sized former, s , within the spindle H' , a plate, P' , having an opening of the same size as the former s , is inserted within the bushing, and the latter then replaced within the frame and secured in place by said screw o . Arbor H' and formers are reciprocated by means of the cam-lug d , engaging the upper end of the lever d' , (the latter being pivoted at d^3 to the frame,) whereby the main shaft in its revolution causes said arbor to move endwise intermittently, a spring, d^5 , returning the lever d' , and thereby the arbor, to its normal position, all as fully shown in Fig. 12. A bearing or support, A^4 , secured to the rear of the machine, carries the arbor. Its outer end is counterbored to receive the arm H , the latter being splined to receive a key or feather secured to the arbor. By means of the arm H the former s is adapted to be slightly adjusted radially without removing said former from the spindle. A bolt, h , serves to clamp the whole in position. I designates the main plunger, which is operated by the disk D , &c., before described. Said plunger is provided

upon its front surface with the two adjustably-secured cutters i^4 . (See right-hand portion of Fig. 4.) k designates a narrow plunger mounted upon the front of the plunger I , and between the cutters i^4 , Figs. 1, 4, and 12. Said plunger k is adapted to rest upon the stock during the cutting and shaping process. It is further provided with an adjusting-screw, i^2 , and spring i^8 . i is the plate which covers the front end of the plunger I .

Within the frame-openings A' are pivoted at C' holders R , each of which is provided with a slotted arm, R^2 , adapted to receive the clamping-screw r' . Said holders are further provided with the elongated openings r^2 , Fig. 18, and rear projections, r^5 .

G is the block, which is adapted to slide freely within the holder R . A projection, r^3 , fits within the opening r^2 . A plate, r^4 , secured to said projection serves to retain the parts in position.

g is a stud or pin of said plate, adapted to engage the slots f^3 of the lever-arms F F^2 , thereby causing the blocks to move in unison with said levers.

U represents the stud shapers or benders, pivoted at u^2 to the sliding block G . u^3 shows an elongated opening therein, adapted to receive the clamping-screw u' ; and u is a screw which passes through the lug g^2 of the block G , for the purpose of adjusting the position of the shapers relatively to the former s . The geared rolls T feed the stock along the guide m m' and against the stop or gage l , (see Fig. 1,) as common.

The machine operates as follows: Assuming that the formers, &c., have been properly adjusted and the stock fed into position, now, by revolving the shaft in the arrow direction, the disk forces the plunger I downwardly, the end of the supplemental plunger k resting against the stock during the movement, Fig. 7. Now, a further movement causes the stock to be severed and bent downward by means of the cutters i^4 , Fig. 9. During this latter travel, however, the plunger k has remained stationary, owing to the compression of the spring i^8 . At this point, while the crank is passing its "dead-center," the cam C , by means of the lever F and connections, causes the steel benders and shapers U to simultaneously move upward and inward, the points s^4 thereof engaging the projecting end of the stock, Fig. 9, and bending them into shape, as shown in Fig. 10. A further movement of the shaft B causes the cam d to engage the lever d' , which in turn connects with the arbor H' , Fig. 12, thereby forcing the latter rearward and bringing the face of the former s flush with the steel plate P' , thus causing the finished traveler z^4 to fall into a receptacle or chute beneath, completing the revolution.

In Fig. 8 the plunger k is not shown, thus representing the tendency of the stock to "buckle," or, in other words, to rise above the former s after the cutters i^4 have performed their functions. It is obvious that travelers

thus produced must necessarily be imperfect; but by means of the yielding plunger *k* the work is rendered perfect and salable.

The arbor *H'* and bushing *P* are adapted to receive formers *s* having various sizes and shapes. The steel shapers *U* are also provided with means for adjustment, and further adapted to produce travelers having the ends bent square instead of "hooking," as shown, by means of the pivoted and radially-slotted holder *R*.

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

1. The combination of the driving-shaft, disk *D*, plungers *I k*, pivoted lever *d'*, arbor *H'*, and former *s*, the parts being connected and operated substantially as described, and for the purposes set forth.

2. The combination of the driving-shaft, disk *D*, plunger *I*, cutters *i'*, pivoted lever *d'*, arbor *H'*, and former *s*, substantially as described, and for the purposes set forth.

3. The combination of the driving-shaft, disk *D*, plungers *I k*, pivoted lever *d'*, cutters *i'*, arbor *H'*, and former *s*, substantially as described, and for the purposes set forth.

4. The combination of a frame, *A*, a driving-shaft, *B*, two pivoted and adjustable shapers, *U*, sliding blocks or holders *G*, toothed levers *F'*, having arms *F''*, a lever, *F*,

the cam *C*, secured to the shaft *B*, and the feeding and cutting-off means, all substantially as shown and described.

5. In a machine for making ring-travelers, the combination, substantially as hereinbefore set forth, of bending-shapers *U*, mounted, arranged, and connected as described, the means for automatically feeding and cutting off a length of stock, and the means, as described, for connecting the plunger *I* and supplemental yielding plunger *k* with the driving-shaft *B*, substantially as shown.

6. The combination of the disk *D*, having an eccentric groove formed in its face, said groove being provided with ring *D'*, the pin *d''*, plungers *I k*, and former *s*, said disk being fixed to the shaft, substantially as described, and for the purposes set forth.

7. The holder *H'*, mounted in the frame *A*, and the former *s*, in combination with the slotted lever *H*, secured to said holder, and the screw *h*, whereby the former *s* is adapted to be radially adjusted, substantially as shown and set forth.

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

ROBT. J. GILMORE.

Witnesses:

GEO. H. REMINGTON,
CHARLES HANNIGAN.