No. 785,133. PATENTED MAR. 21, 1905.

W. H. WAGNER.

GROMET SETTING MACHINE.

APPLICATION FILED MAY 18, 1903.

3 SHEETS—SHEET 1.

Fig. 6.

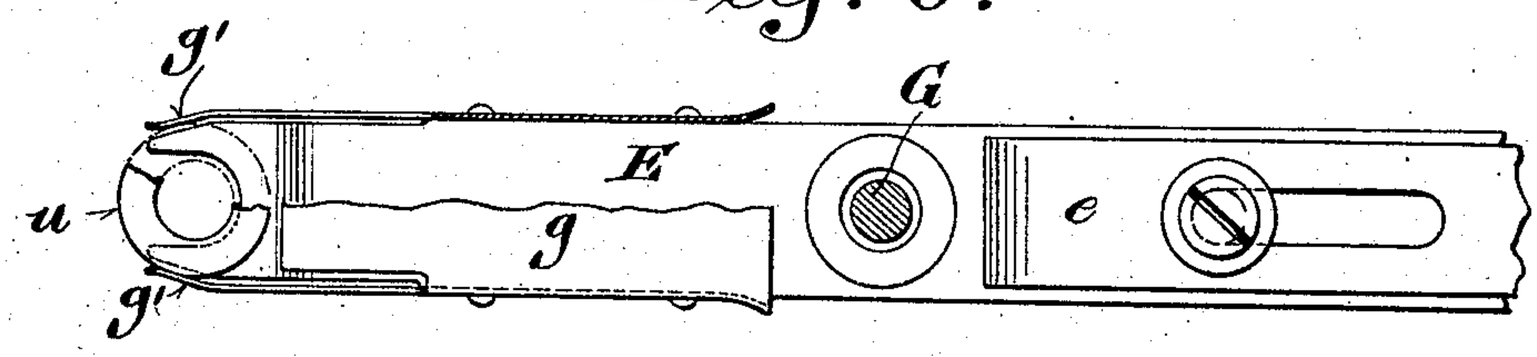
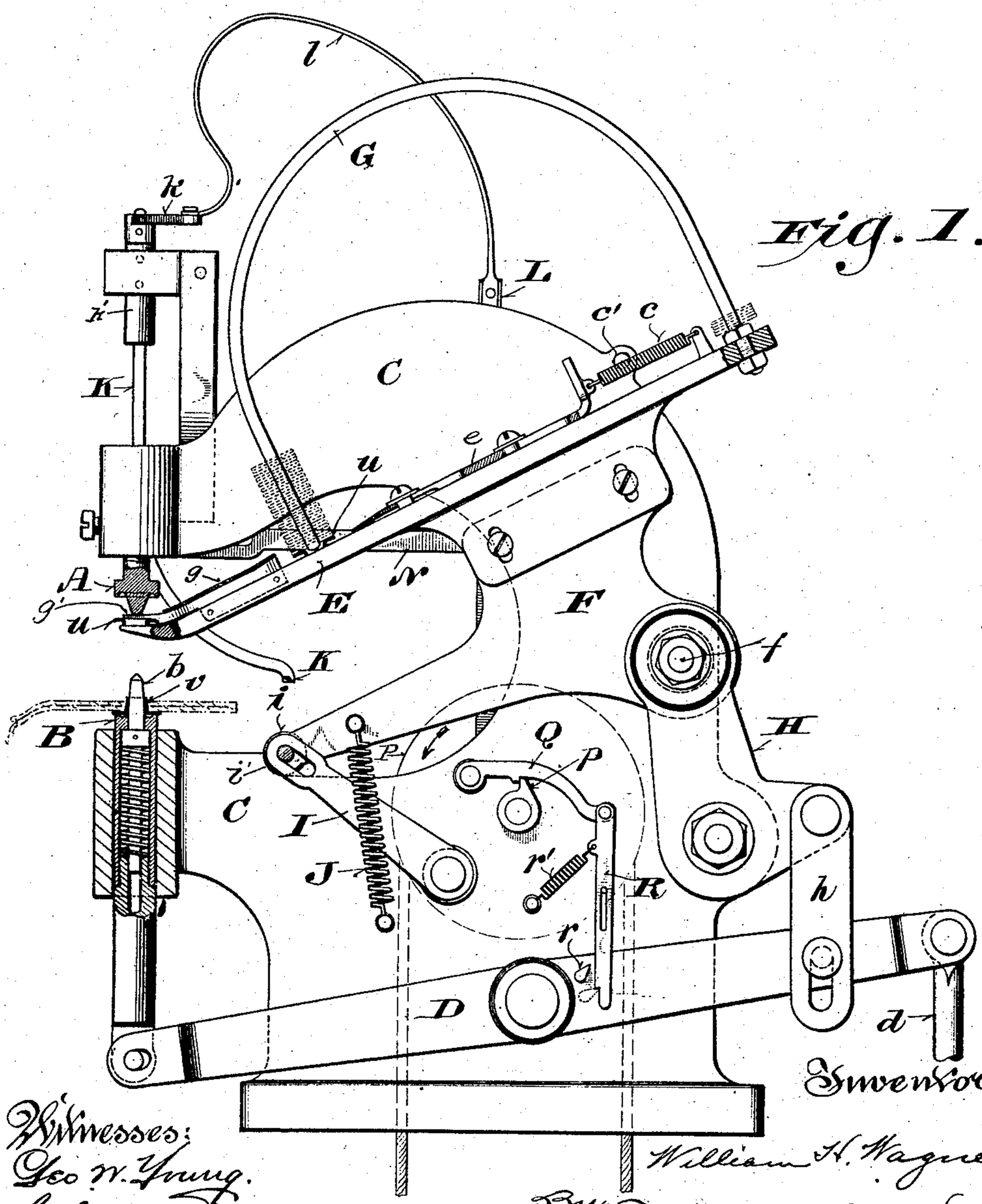


Fig. 1.



Witnesses:
Geo. H. Young.
Chas. L. Goss.

Inventor:
William H. Wagner,
By Munn & Flannery, Smith & Dothim, Their Attorneys.

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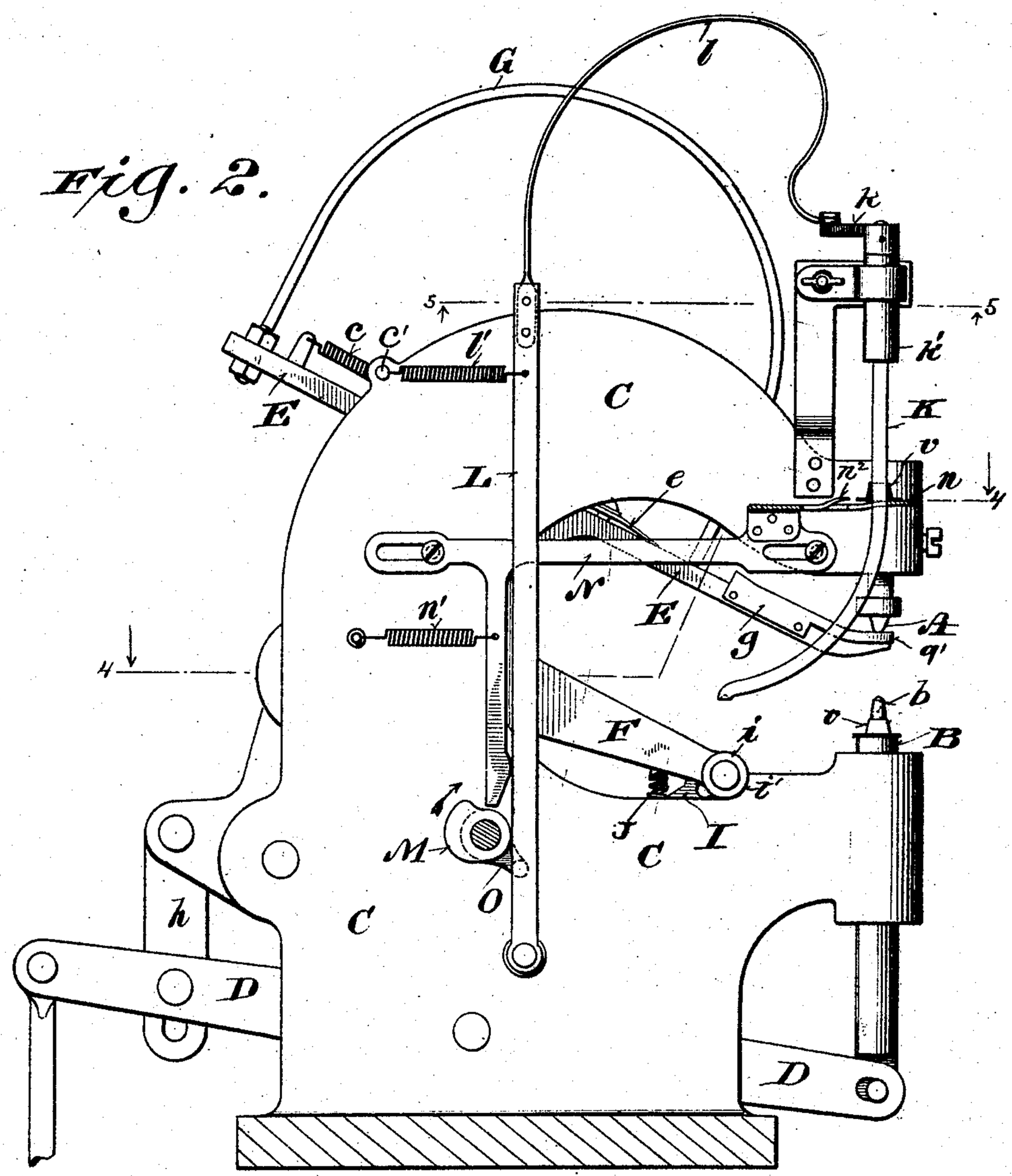
3 SHEETS—SHEET 2.

Fig. 2.



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Geo. W. Young.
Chas. L. Goss.

Inventor:
William H. Wagner,
By Winkler Flanders Smith Bottum & Vilas
Attorneys

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3 SHEETS—SHEET 3.

Fig. 5.

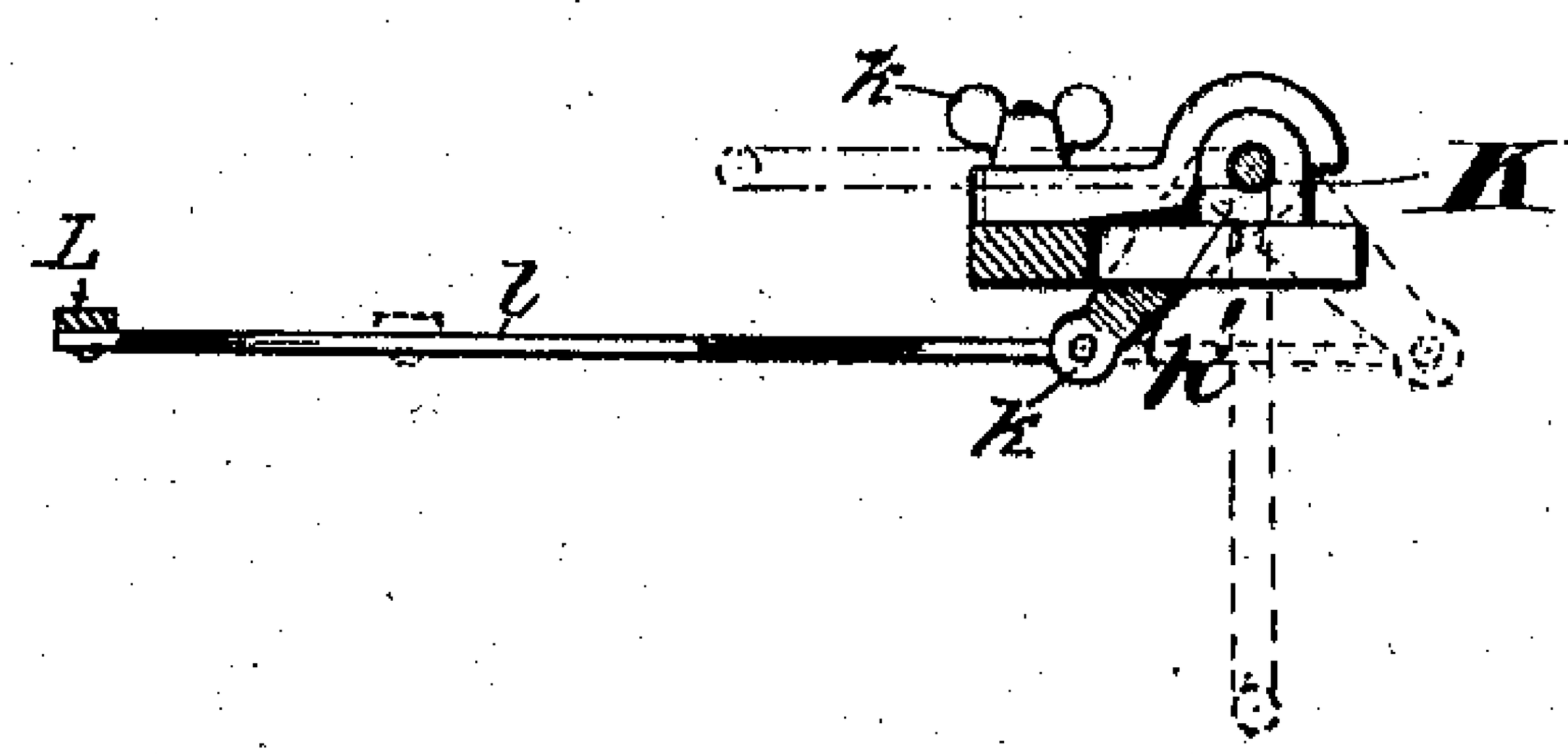


Fig. 3.

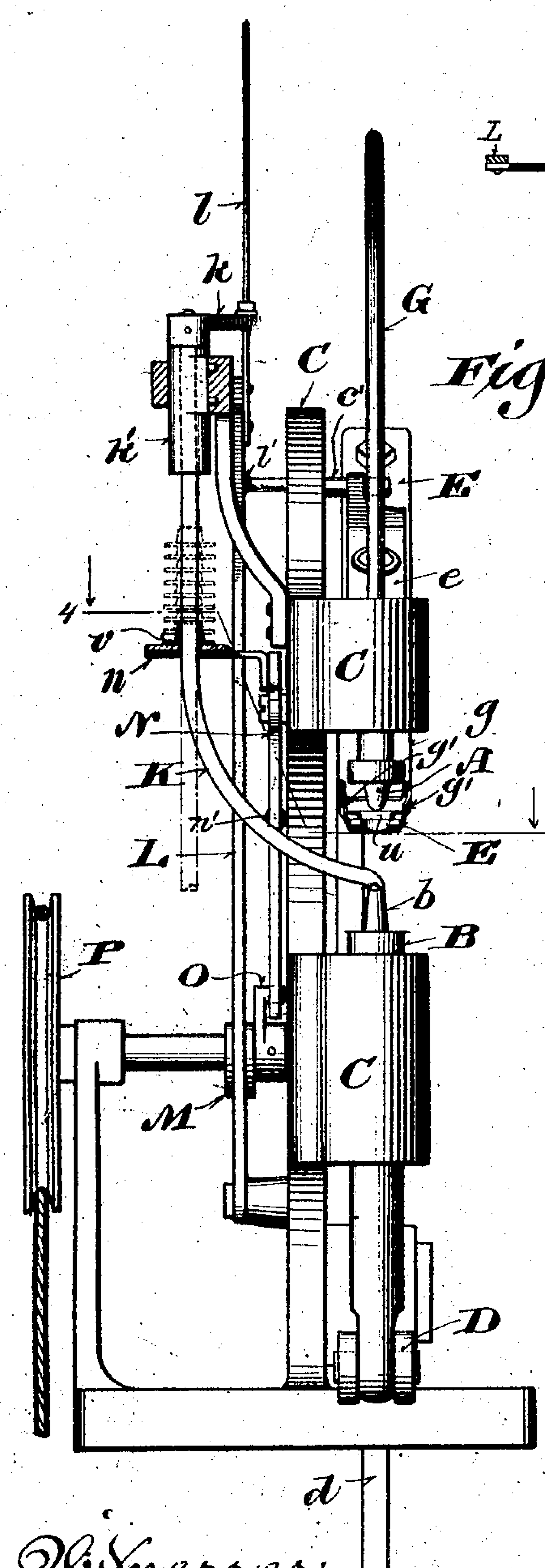
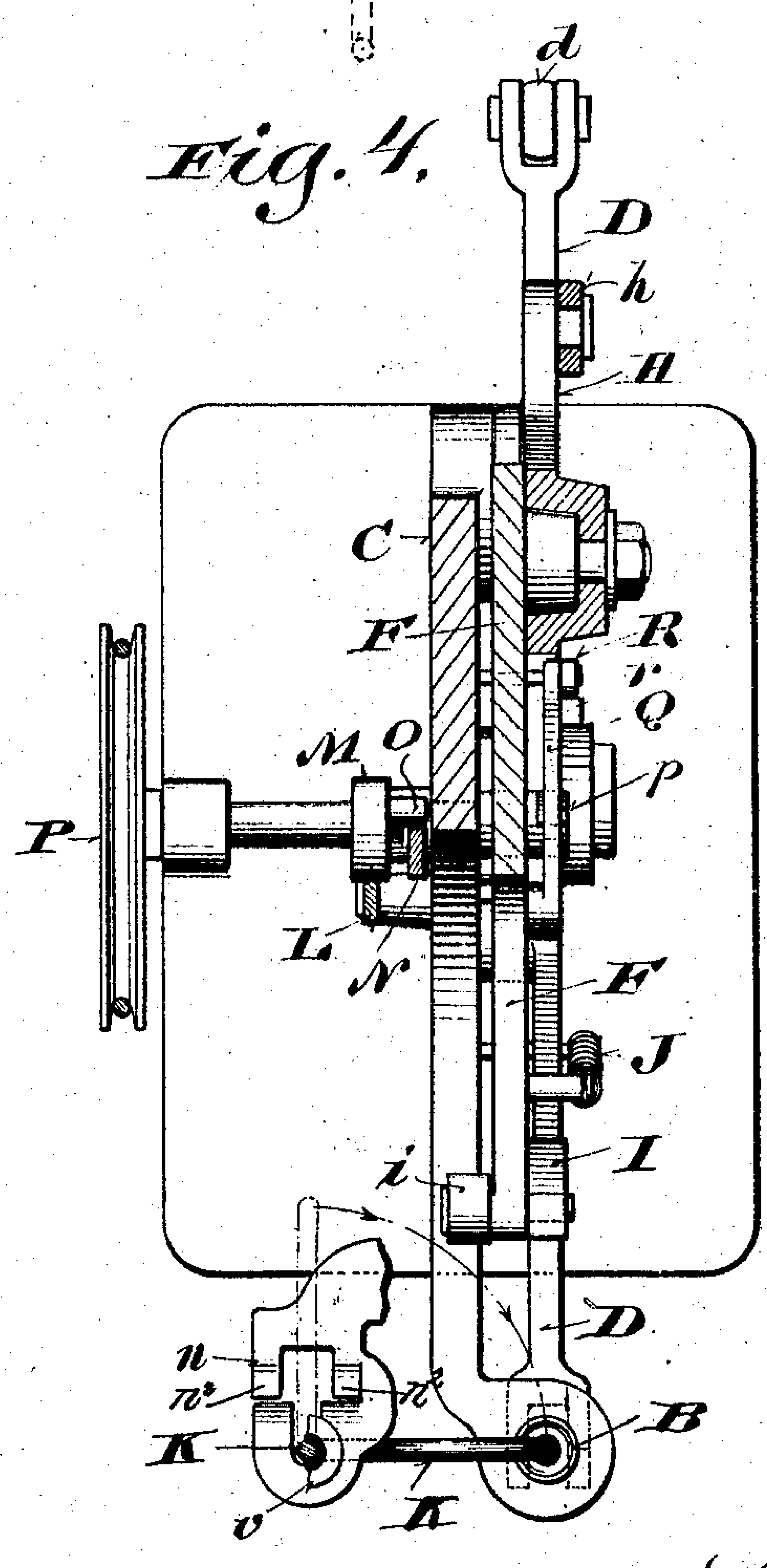


Fig. 4.



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Chas. L. Goss

Inventor.

William H. Wagner,

By Winkler Flanders Smith Bottum & Vilas

Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM H. WAGNER, OF BURLINGTON, WISCONSIN, ASSIGNOR TO BURLINGTON BLANKET COMPANY, OF BURLINGTON, WISCONSIN, A CORPORATION OF WISCONSIN.

GROMET-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 785,133, dated March 21, 1905.

Application filed May 18, 1903. Serial No. 157,536.

To all whom it may concern:

Be it known that I, WILLIAM H. WAGNER, a citizen of the United States, residing at Burlington, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Gromet-Setting Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The main object of this invention is to automatically feed the eyelets and washers or the parts of which gromets are composed one by one to the dies or punches by which the eyelets are upset and secured with the washers in a blanket, tent, awning, or other article in which they are to be set.

It consists in certain novel features of construction and in the peculiar arrangement and combinations of parts hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a side elevation of the upper portion of a gromet-setting machine embodying my improvements, certain parts being broken away and shown in section. Fig. 2 is an elevation of the reverse side of the machine. Fig. 3 is a front elevation. Figs. 4 and 5 are horizontal sections on the lines 4 4 and 5 5, respectively, Figs. 2 and 3; and Fig. 6 is a plan view, on an enlarged scale, of a portion of the support and guide for supplying washers or gromet-sections to the upper die or punch, certain parts being broken away.

A and B are setting dies or punches which are mounted in line with each other in the frame C. The lower die B, which is movable in the frame toward and from the upper stationary die A, is operated by a lever D and has a yielding center-pin *b* for holding the eyelet or one part of the gromet in place when the dies are separated. This pin is pushed back into the die out of the way when the two dies are brought together for upsetting the eyelet in the washer and thus securing the parts of a gromet in a blanket or other article.

The lever D is operated through a connecting-rod *d* by a foot-lever, which is not shown.

As thus far described the machine is like or similar to those heretofore made and used for this purpose.

E is a support, forked, as shown in Figs. 1 and 6, at its front end, which extends normally downward below and close to the upper die A. It is mounted on and forms a part of a carrier F and is provided with a curved spring-rod G, which is detachably connected therewith at one end and on which washers *u* are strung, as indicated in Fig. 1.

A longitudinally-movable pusher *e* is provided on the support E for disengaging and removing the washers *u* one at a time from the free end of the rod G. This pusher is connected with the support E by a retracting-spring *c* and is provided at its rear end with an upward projection which is adapted to engage with a stop *c'* on the frame and to arrest the pusher when the carrier F is thrown back, as hereinafter explained.

At its front end, on the upper side, said support E is provided with a guide *g*, terminating at its front end on the sides with converging springs *g' g'* for arresting and holding a gromet-section or washer *u* centrally below the die A, as shown in Figs. 1 and 3.

The carrier F is pivoted at *f* to one arm of a bell-crank lever H and is connected by a link I with the frame C. It is provided at its front end with a roller *i*, which normally bears on a substantially horizontal guideway, terminating at its front end in an upturned shoulder *i''* on the frame C. The other arm of the lever H is connected by a link *h* with the lever D.

A spring J, connecting the carrier F with the frame C, tends to hold the roller *i* against its guideway on said frame, as shown in Figs. 1 and 2. The links *h* and I have longitudinal slots engaged by the pivot-pins on the lever

D and carrier F, thus providing for a certain amount of lost motion between said parts.

K is a curved rod provided at its upper end with a crank-arm *k* and journaled just below said crank-arm in a vertical sleeve or box *k'*, which is detachably secured to a bracket on the frame C. On this rod are strung, as shown in Figs. 2 and 3, the eyelets *e*, which are fed therefrom to the lower die B. The lower end of this rod is formed with a cavity which fits over the center-pin *b* when said rod is turned into the position in which it is shown in Fig. 3. The crank-arm *k* has a spring connection *l* with the upper end of the lever L, which is fulcrumed at its lower end to the frame C. This lever is intermittently thrust forward against the tension of a retracting-spring *l'* by a cam M.

N is a horizontally-sliding bar provided at its front end with a slotted plate *n*, through which the rod K passes, and which has two forwardly-projecting tongues n^2 n^2 struck up therefrom on opposite sides of the slot therein and is so shaped that when drawn backward it will support a series of gromet-sections or eyelets *e* above it on said rod, as shown in Figs. 2 and 4, and when thrust forward the tongues will pass above the flange of the lowest eyelet, permitting it to descend on the rod, while the eyelets above are held back by said plate. The bar N has a depending arm in the path of a cam or crank O, which intermittently thrusts the plate *n* forward against the tension of a retracting-spring *n'*. The cams M and O are mounted on a shaft which is provided with a grooved pulley P and with a tooth *p*. (Shown in Fig. 1.) The cam-shaft is normally held against rotation by a dog or detent Q, pivoted to the frame and normally engaging the tooth *p*, the driving-belt in the meantime slipping on the pulley P. To the dog Q is pivoted a vertically-sliding bar R, the lower end of which projects into the path of a lug *r* on the lever D. A spring *r'*, connecting said bar with the frame, withdraws it into and normally holds it in its lower position.

The machine hereinbefore described operates as follows: Holes having been punched in the blanket or other article where the gromets are to be set therein and an eyelet *v* being placed on the lower die B and a washer *u* on the forked end of the support E directly below the upper die A, as shown in Fig. 1, the blanket or other article is then placed over the eyelet on the lower die, as indicated by dotted lines in Fig. 1. The operator now depresses the foot-lever, which acts, through the lever D, to thrust the lower die B upwardly against the upper die A. This movement of lever D operates, through the lever H, to withdraw the carrier F with the support E, sufficient delay, however, being provided for by the slot in link *h* to permit the center-pin *b* of the lower die to enter the hole in the washer *u* before said carrier starts backward. The initial movement of the support E backward does not materially affect its inclination, the roller *i* bearing against the guideway on the frame C; but when the lower end of the slot in the link I engages the pivot-pin on carrier F the roller *i* is carried upward out of contact with the frame and said support is brought to an approximately horizontal position. As the support E is withdrawn and approaches a horizontal position the projection on the rear end of the pusher *e* engages with the stop *c''* on the frame and is thereby arrested and caused to thrust the lower washer *u* underneath the free end of rod G upon the support E into the guide *g*. Owing to the substantially horizontal position of the support E when it is thrown back, as above stated, this detached washer does not immediately slide into position on the front end of said support; but when the foot-lever is released and the lever D is allowed to resume its original position the carrier F and support E are forcibly thrown forward by the spring J, assisted, it may be, by gravity or by a retracting spring connected with the foot-lever, and the jar of the roller *i* striking against the frame C throws the disengaged washer forward into place between the converging springs *g'* on the sides of the guide *g*, as shown in Figs. 1 and 6. In its forward position the carrier is arrested when the washer on the forked end of said support is between and directly in line with the dies A and B by the roller *i* coming in contact with the shoulder *i''*. As the rear end of lever D descends the lug *r* thereon passes below the lower end of the bar R or a shoulder thereon, so that when said lever is released and is returned by gravity or a retracting-spring to its original position said lug will engage with said bar and lift the dog Q out of engagement with the tooth *p*. The cam-shaft being thus released is caused to make one revolution by the belt passing over the pulley *p*. The cam M engaging with the lever L throws it forward and through the spring connection *l* and crank *k* turns the lower end of the rod K, as indicated in Fig. 5, into the position in which it is shown in Figs. 3 and 4. The crank or cam O then engaging the arm on the sliding bar N thrusts the plate *n* forward, separating the lower eyelet *v* from those above it and allowing it to pass down upon said rod into place on the pin *b* of the lower die. The rod K and the plate *n* are then returned to their original positions by the retracting-springs *l'* and *n'*. The gromet-sections are thus automatically supplied to the dies by the operation of the lever, which forces the dies together and sets said sections in the article to which they are to be applied.

Various changes in the minor details of con-

struction and arrangement of parts may be made within the spirit and intended scope of the invention.

I claim—

1. In a gromet-setting machine the combination with setting-dies, of rods on which the gromet-sections are strung, and means for feeding said sections one at a time from said rods to each of said dies, substantially as described.

2. In a gromet-setting machine the combination with the setting-dies, one of which is movable toward and from the other, and means for operating the movable die, of rods on which the gromet-sections are strung, and feeding devices arranged to release and deliver the gromet-sections one at a time from each rod to each die in position for setting, substantially as described.

3. In a gromet-setting machine the combination with setting-dies, and means for feeding gromet-sections to one of said dies, of a carrier provided with a rod for holding a series of gromet-sections thereon, a pusher for removing the sections from said rod one at a time, and means for moving said carrier toward and from the other die and delivering the detached gromet-section in position for setting between said dies, substantially as described.

4. Ir a gromet-setting machine the combination with setting-dies of a curved rod for holding a series of gromet-sections strung thereon; means for turning the free end of said rod into position for delivering a gromet-section to one of said dies, and a reciprocating slotted plate for supporting the series of gromet-sections on said rod and releasing them one at a time, substantially as described.

5. In a gromet-setting machine the combination with a suitable frame and setting-dies, and means for feeding eyelets to one of said dies, of a carrier, pivoted arms connecting said carrier with the frame and arranged to hold it in an inclined position when thrown forward and in an approximately horizontal position when thrown backward, a lever arranged to operate one of said dies and said carrier, a rod for holding a series of washers on said carrier, a spring-retracted pusher mounted upon said carrier, and a stop on the frame in the path of said pusher arranged to arrest it and cause it to thrust one of said washers from the series when said carrier is swung back, substantially as described.

6. In a gromet-setting machine the combination with a suitable frame and setting-dies, and means for feeding eyelets to one of said dies, of a carrier, a slotted link and a lever connecting said carrier with the frame, a bearing on said frame for said carrier in its forward position, a spring tending to swing said carrier forward against said bearing, a lever for operating one of said dies connected by a slotted link with the carrier-supporting lever, a yielding rod mounted upon said carrier for holding a series of washers, and a pusher adapted to thrust one of said washers from the series when said carrier is swung back, substantially as described.

7. In a gromet-setting machine the combination with setting-dies, one of which has a retractile center-pin, of a shaft provided with cams, means tending to turn said shaft, a detent for holding said shaft from turning, a curved oscillatory rod adapted to hold a series of gromet-sections and to be turned into position to deliver them to said center-pin, a reciprocating plate movable transversely to said rod in position to support a series of gromet-sections thereon and slotted and tongued to release them one at a time, mechanism actuated by said cams to intermittently turn said rod and reciprocate said plate, and means for operating one of said dies and releasing said detent, substantially as described.

8. In a gromet-setting machine the combination with setting-dies, of a swinging carrier adapted to deliver washers to one of said dies and provided with a rod for holding the washers and with a pusher for removing the washers one at a time from the rod, a curved rod for supplying eyelets to the other die, a reciprocating plate adapted to support the eyelets on said rod and slotted and tongued to release them one at a time, an intermittently-rotated shaft provided with cams for turning said curved rod and operating said slotted plate, and a lever for operating the movable die and the carrier, and for releasing the cam-shaft, substantially as described.

9. In a gromet-setting machine the combination with setting-dies, one of which has a retractile center-pin, of a rod supported and adapted to turn at or near its upper end in a vertically-disposed bearing and curved at its lower end which is arranged to be swung into and out of line with said center-pin, a lever having a spring connection with a crank on said rod, a reciprocating slotted plate movable transversely to said rod and provided with upturned tongues on opposite sides of the slot through which the rod passes, and a shaft provided with cams for operating said lever and plate, to first turn said rod into engagement with said center-pin and then to release a gromet-section, substantially as described.

10. In a gromet-setting machine the combination with a suitable frame, setting-dies, one of which is movable axially toward and from the other and has a retractile center-pin, and means for depositing eyelets one at a time upon the center-pin of the movable die, of a swinging carrier forked and provided on the sides with converging springs at its front end which comes opposite the stationary die when said carrier is tipped forward, a rod for holding washers mounted on said carrier and hav-

ing one end presented to and free to yield away from its upper face, a spring-retracted pusher mounted and movable longitudinally upon said carrier, a stop arranged on the frame to arrest said pusher and thrust it underneath the free end of said rod when said carrier is swung backward, and a lever having connections arranged to first advance the movable die toward the stationary die and then swing said carrier backward, substantially as described.

In witness whereof I hereto affix my signature in presence of two witnesses.

WILLIAM H. WAGNER.

Witnesses:
PEARL G. OWEN,
JNO. REYNOLDS.