C. A. SVENSSON.

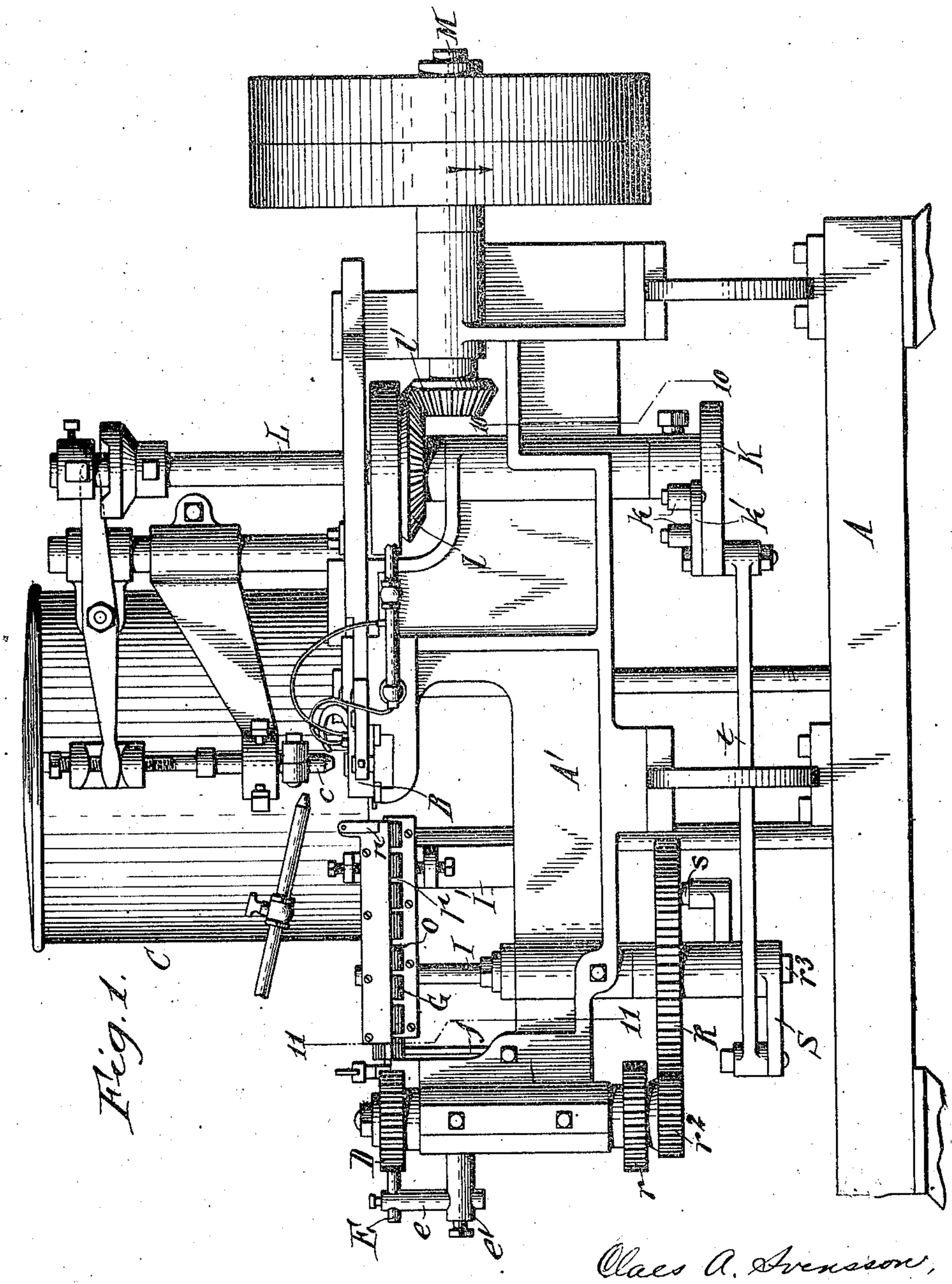
WIRE GUIDE AND CUTTER.

APPLICATION FILED OCT. 4, 1906.

996,896.

Patented July 4, 1911.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

Fig. 2.

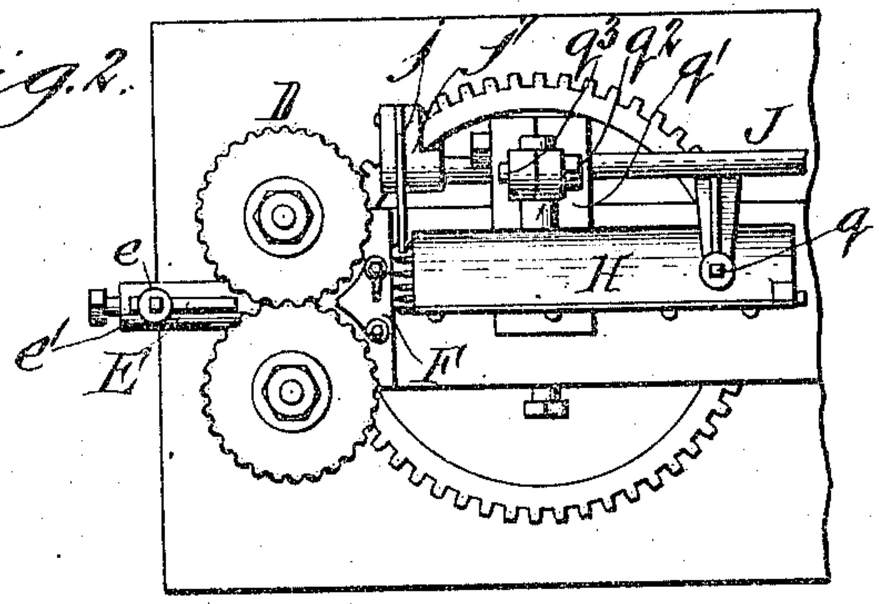


Fig. 3

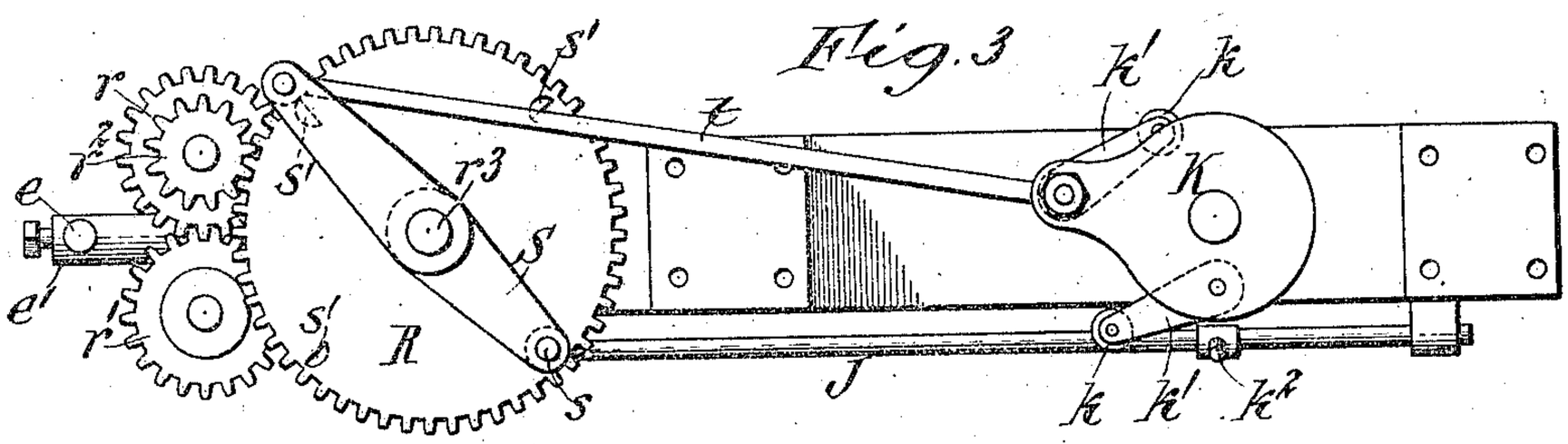


Fig. 4.

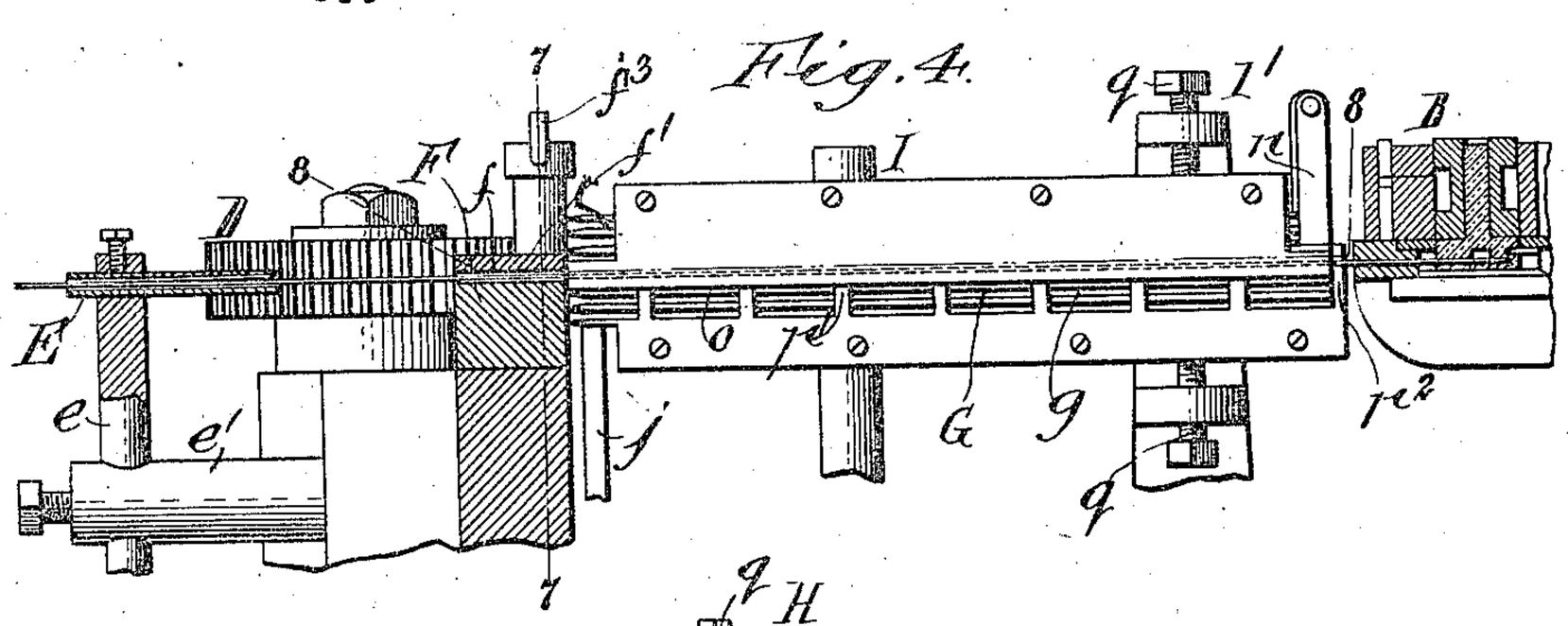
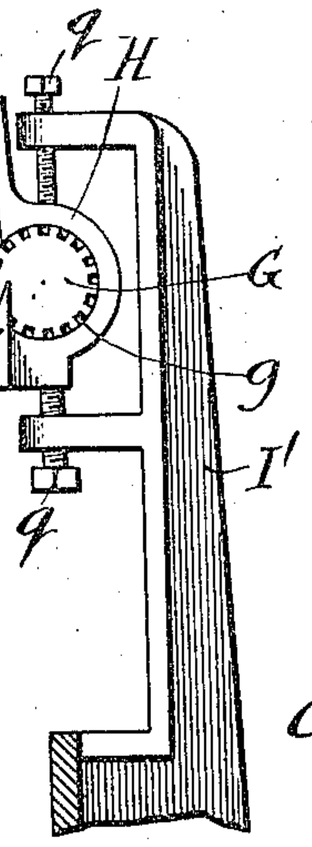


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

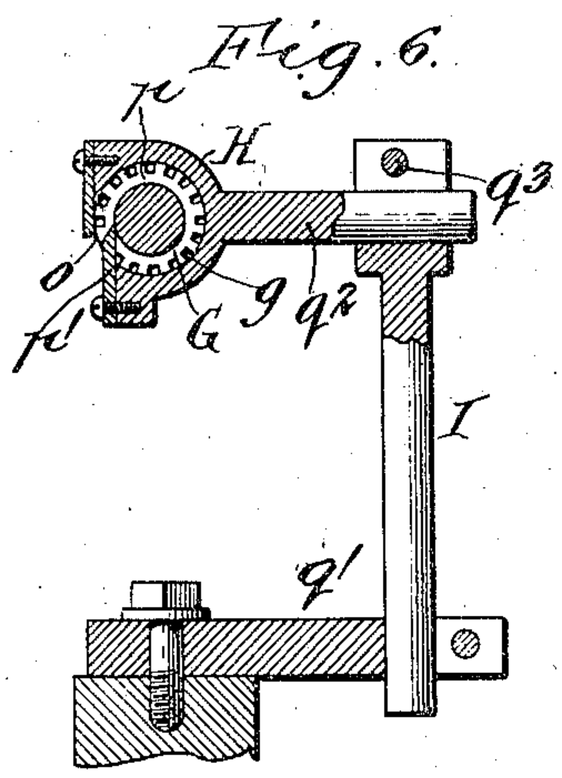


Fig. 7.

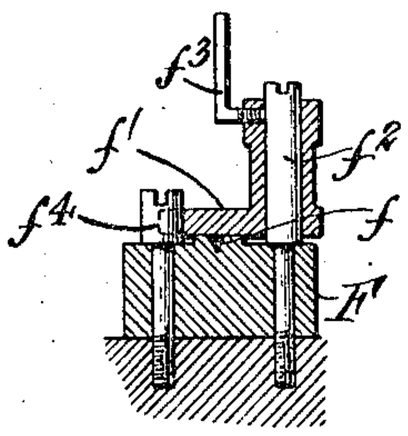


Fig. 8.

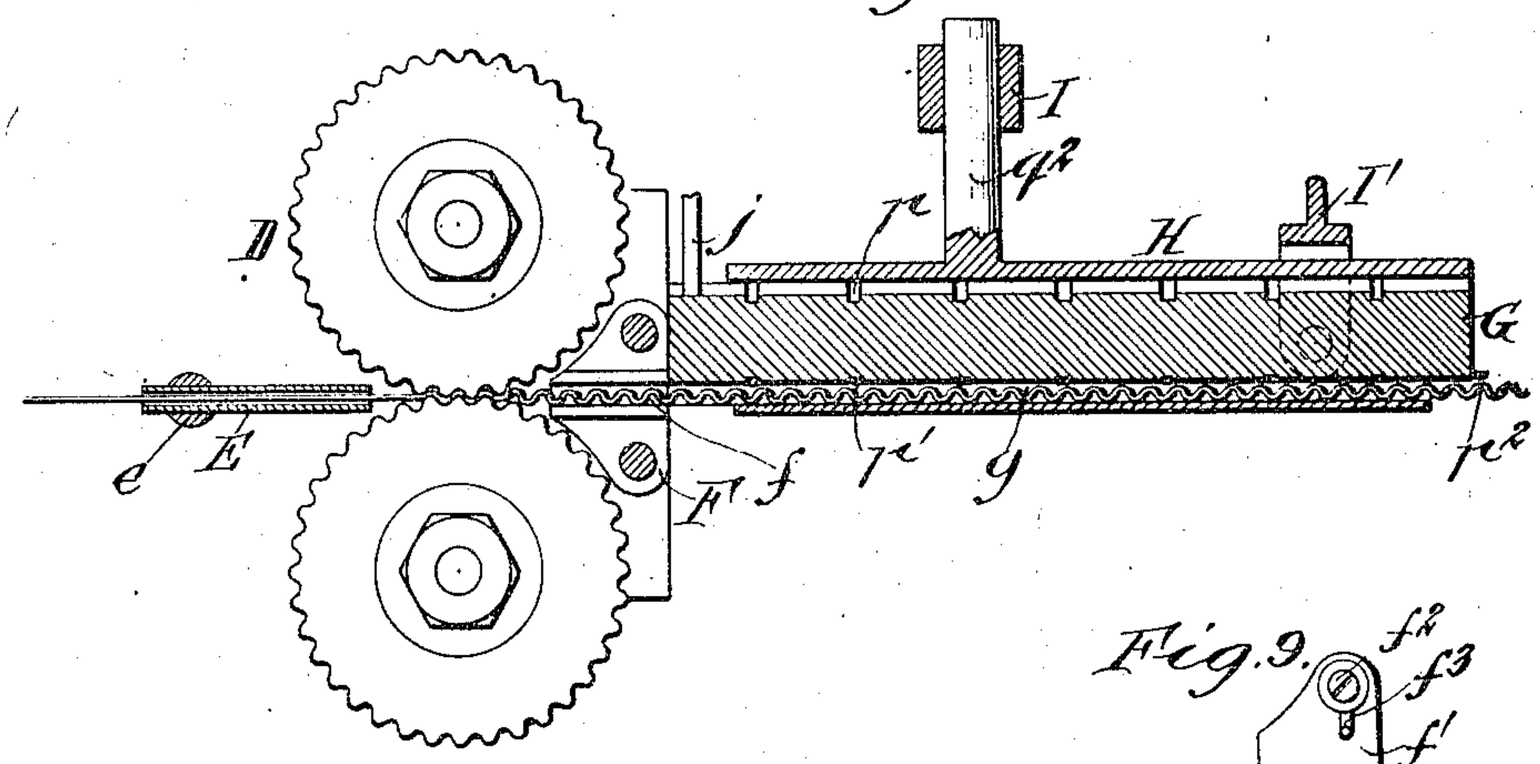


Fig. 9.

Fig. 10.

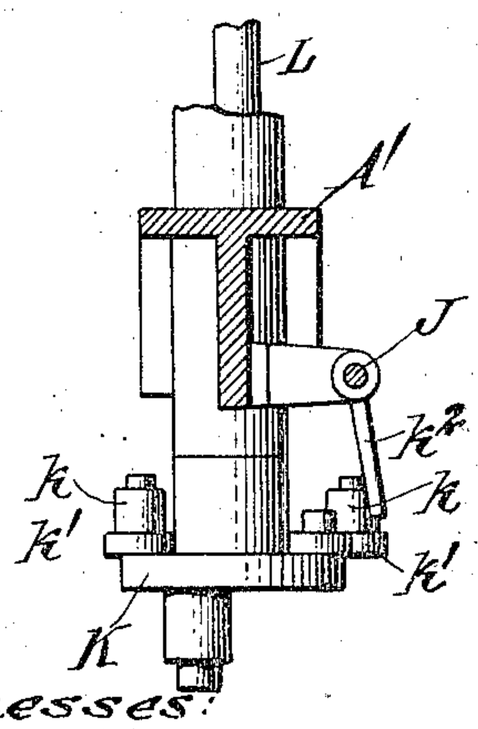
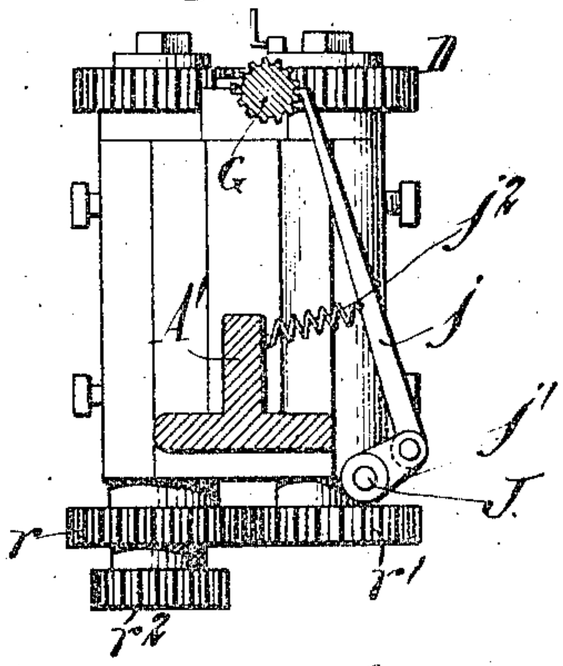


Fig. 11.



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UNITED STATES PATENT OFFICE.

CLAES A. SVENSSON, OF BUFFALO, NEW YORK.

WIRE GUIDE AND CUTTER.

996,896. Specification of Letters Patent. Patented July 4, 1911.

Original application filed October 7, 1901, Serial No. 79,024. Divided and this application filed October 4, 1906. Serial No. 337,396.

To all whom it may concern:

Be it known that I, CLAES A. SVENSSON, a citizen of the United States of America, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Wire Guides and Cutters, of which the following is a specification.

This invention relates to a device designed more especially for guiding a continuous piece of wire from a suitable feed device to a mold in which a soft metal seal is cast upon the end of the wire, and for cutting the wire into proper lengths. The invention, however, is not limited to that particular use.

A seal-casting machine to which the invention is applicable is shown and described in another application for patent filed by me October 7, 1901, Serial No. 79,024, of which the present application is a division.

The principal object of this invention is the provision of a simple and reliable guiding device which will positively direct and present the advancing end of the wire to a mold or other desired device or destination.

A further object is to so construct and arrange the wire-guide that it serves at the same time as a cutter for severing the wire into suitable lengths.

In the accompanying drawings consisting of 3 sheets: Figure 1 is a side elevation of a seal-making machine embodying the invention. Fig. 2 is a top plan view of the rotary wire guide and cutter and the feed devices. Fig. 3 is a detached bottom plan view of the driving mechanism of said parts. Fig. 4 is a vertical longitudinal section of the machine, on an enlarged scale, the plane of the section being centrally through the stationary wire-guides. Fig. 5 is an elevation of the rear end of the wire-guide and cutter and the adjacent rear standard. Fig. 6 is a transverse section of said guide and cutter and the front standard. Fig. 7 is a transverse vertical section of the fixed rear wire-guide in line 7—7, Fig. 4. Fig. 8 is a horizontal section in line 8—8, Fig. 4. Fig. 9 is a top plan view of the stationary wire guide between the feed rollers and the rotary wire-cutter. Figs. 10 and 11 are enlarged cross sections on the correspondingly numbered lines in Fig. 1.

Similar letters of reference indicate corresponding parts throughout the several views.

A is a suitable bed or table upon which the machine is supported. The frame of the machine shown in the drawings consists of an upright longitudinal beam A^1 stiffened by ribs or flanges and arranged centrally of the machine. Located centrally on this frame is a seal-casting mold B, and above it is a delivery nozzle *c* for the molten metal which is connected with a suitable melting pot C. The special construction of the last-named parts forms no part of the present invention.

D indicates a feed device for delivering a continuous length of wire to the mold, so as to cast one end of the wire in the seal. This feed-device preferably consists of a pair of horizontal feed-rollers arranged at the front end of the machine and located at the proper distance apart to receive the wire between their peripheries and feed the same forward. These rollers may have plain or smooth faces, but when the wire is to be crimped or corrugated as in some kinds of seals, the peripheries of the rollers are provided with vertical teeth or corrugations, as shown in the drawings. The wire is preferably taken from a continuous coil wound upon a reel, not shown in the drawings, and is directed between the feed-rollers by a stationary horizontal guide-tube E arranged in line with the meeting sides of the rollers. This guide is supported in a standard *e* rising from a bracket e^1 secured to the stationary frame, as shown in Figs. 1 and 4.

On the rear side of the feed-rollers is located a second stationary wire-guide F consisting preferably of a block having a straight vertical rear face and a guide-eye or channel *f* for the wire arranged in its top in line with the guide-tube E. The upper side of this guide-eye is preferably formed by a movable plate f^1, Fig. 7, which is capable of sliding vertically upon a stud f^2 secured to the block F to permit the wire to be removed in case it should bind in the guide-eye by becoming bent or kinked. The covering-plate f^1 is held down in place by a set screw f^3, or other means, and in its depressed position interlocks with a stud or screw f^4 which fits into a notch in the free

end of the plate, as shown in Fig. 9, thereby preventing turning of the plate on the stud f^2.

Between the guide-block F and the seal-casting mold or other part designed to receive the wire, is arranged a wire guide and cutter G which is adapted to direct the wire toward or into said mold or other part and also to sever the continuous wire at a suitable distance from the mold to leave the same of the desired length. This wire-guide and cutter consists of a rotary horizontal barrel arranged lengthwise between the mold and the rear wire-guide F with its front side in line with said rear wire-guide. The barrel is provided in its cylindrical surface with an annular series of grooves g which extend throughout its length and are arranged to register successively with said guide F so as to receive the front end of the wire as it is fed forward by the feed rollers. The front ends of these grooves may be flared to facilitate the entrance of the wire into the same, as shown in Fig. 2. The straight front end of the rotary barrel bears against the straight rear side of the guide-block F and forms a cutting edge which severs the wire at that point, after the advancing end of the wire has been fed into the mold. As shown in Fig. 4, the barrel turns in a stationary supporting sleeve or bearing H which extends nearly throughout its length and is carried by brackets or standards I, I^1 rising from the frame A^1. An intermittent rotary motion is imparted to the barrel from a rock-shaft J by an actuating pawl j carried by an arm j^1 secured to said shaft. The ribs left between the longitudinal grooves of the barrel form teeth with which the pawl j engages, as shown in Figs. 2 and 11. This pawl is held in engagement with the barrel by a spring j^2. The shaft J which is located on the rear side of the barrel is rocked by a pair of tappets k connected with a rotary crank-disk K by rigid arms k^1 and arranged to trip alternately over opposite sides of an actuating arm k^2 of the said shaft, as shown in Figs. 1, 3 and 10. This crank-disk is secured to the lower end of an upright shaft L which is driven by bevel gears l, l^1 from the horizontal main shaft M of the machine. Retrograde movement of the barrel G is prevented by a detent pawl n attached to the rear end of the bearing H and engaging with the ribs of the barrel, as shown in Figs. 4 and 5.

The bearing H is provided at its front side with a longitudinal discharge-passage or aperture o for the severed wires, which passage extends from end to end of the bearing, as shown in Figs. 1 and 4. In order to insure the discharge of the wires from the grooves of the barrel upon arriving opposite the passage o, the barrel is provided at suitable intervals with circumferential grooves p into which extend strippers or fingers p^1. These strippers bear against the bottom of said annular grooves and their inner ends are beveled, as shown in Fig. 6, so that the wires are deflected or wedged out of the grooves upon encountering the inclined ends of the strippers and discharged through the passage o. One of these strippers is also preferably located at the rear end of the barrel outside of its bearing, as shown at p^2 in Figs. 4, 5 and 8.

By employing a series of strippers arranged in alinement at the front side of the barrel G, as shown, the severed lengths of wire are discharged laterally in a straight and even manner, preventing bending of the same and permitting the seals with the attached wires to be closely and neatly packed. The strippers also serve to prevent endwise displacement of the barrel in its bearing.

When the cutting edge of the barrel becomes dull, the same is readily sharpened by grinding off its front end. As this operation shortens the barrel, its bearing H is made endwise adjustable in any suitable manner, so that it can be shifted toward the guide-block F to compensate for the stock removed by grinding its end. In the construction shown in the drawings, Figs. 5 and 6, the rear portion of said bearing is adjustably supported in the bifurcated upper end of the rear standard I^1 by set screws q arranged in the jaws of the standard, while the front standard I of the bearing is carried by the free end of an arm or bracket q^1 secured to the stationary frame. The bearing H is provided with a rearwardly extending stem q^2 which is clamped in the bifurcated upper end of the standard I by a bolt q^3 so that upon loosening this bolt the stem and the bearing carried by the same can be adjusted backward or forward as required.

The feed-rollers D are rotated intermittently, and when the invention is embodied in a seal-casting or similar machine, their motion is so timed that they feed the wire forward into the mold during the interval that the latter is open, and remain at rest while the seal is being cast. Any suitable driving mechanism may be employed for effecting this movement of the feed-rollers.

The mechanism shown in the drawings is constructed as follows: As shown in Fig. 3, the feed-rollers are geared together by intermeshing spur gears r, r^1 of uniform diameter secured to their shafts, respectively, and one of these shafts carries a gear pinion r^2 which meshes with a large gear wheel R mounted loosely on a vertical shaft or arbor r^3. This large gear wheel is rotated intermittently for a quarter turn at a time, by an oscillating lever S one arm of which carries a spring bolt or catch s of suitable construction arranged to interlock succes-

sively with four notches s^1 formed in the underside of said gear wheel at equidistant radii thereof. The catch of the oscillating lever S and the corresponding notches of the gear wheel R have abrupt and beveled faces which cause said wheel to turn forward with the lever, but allow the catch to leave the notches and ride idly over the wheel during the return stroke of the lever. This lever oscillates upon the shaft r^3 and is actuated from the crank-disk K by a connecting rod t, as seen in Figs. 1 and 3. The throw of this disk corresponds to the distance between adjacent notches of the gear wheel R.

The operation of the machine is as follows: The feed rollers D and the guide and cutter-barrel G are rotated intermittently by the mechanism hereinbefore described, but are timed to operate alternately. The end of the continuous wire being inserted in the front-guide tube E, the same is fed forward through the rear guide block F and into that guide groove g of the barrel which for the time being registers with said rear block. This groove directs the advancing end of the wire into the mold B, which latter then receives a charge of molten metal, thus casting a seal upon the end of the wire, as more fully described in the application for patent hereinbefore referred to. After the seal has been cast, the barrel G turns the distance from one of its guide grooves to the next, thereby cutting off the wire at the rear edge of the guide block F and bringing the next groove of the barrel into register with the guide-eye of said block. The movements of the wire feeder and the barrel are so timed that they both remain at rest while the seal is being cast and so that the barrel is turned to sever the wire immediately after the casting operation. During the rotation of the barrel, the severed wire encounters the beveled ends of the strippers p^1, p^2 and the wire with the attached seal is discharged through the side aperture or passage o of the bearing H.

From the foregoing it will be seen that the grooved barrel G with its coöperating parts performs the three-fold function of a positive guide for the wire between the feed rollers and the mold or other element, a wire-cutter, and a discharge device for the severed wires.

While I have herein shown and described the improvement as applied to a seal-making machine, the same is not confined to that particular use, but is applicable to or useful in connection with various other machines for producing articles partly or wholly of wire.

I claim as my invention:

1. The combination of a wire feeder, a stationary wire-guide arranged beyond the feeder, a rotary cutter-barrel coöperating with said stationary guide and having a plurality of longitudinal guide-grooves arranged to successively receive the wire from said stationary guide, means for intermittently rotating the barrel, and a bearing for the barrel extending throughout the length thereof and having a longitudinal discharge aperture for the severed wires, substantially as set forth.

2. The combination of a stationary wire guide, a rotary cutter-barrel coöperating therewith and provided around its periphery with a series of longitudinal guide-grooves arranged to successively receive the wire from said guide, and a sleeve surrounding the barrel for retaining the wires in said grooves and provided with a longitudinal aperture for discharging the wires.

3. In a wire-guide, the combination of a barrel having longitudinal guide-grooves, and means for positively removing the wires from said grooves, substantially as set forth.

4. In a wire guide, the combination of a barrel having longitudinal guide-grooves and a transverse groove intersecting the longitudinal grooves, and a stripper arranged in said transverse groove, substantially as set forth.

5. In a wire guide, the combination of a barrel having longitudinal guide-grooves, and a plurality of annular grooves intersecting the longitudinal grooves at suitable intervals, and strippers extending into said annular grooves, substantially as set forth.

6. In a wire guide, the combination of a barrel having longitudinal guide-grooves, and an annular groove intersecting the longitudinal grooves, a stripper extending into the annular groove, and a bearing inclosing the barrel and provided in its side with a discharge-aperture for the wire, substantially as set forth.

7. The combination of a stationary block, and a rotary cutter-barrel coöperating at its end with said block and capable of endwise adjustment to compensate for wear, said barrel having longitudinal wire-guides, substantially as set forth.

8. The combination of a stationary block, a bearing arranged adjacent to said block and capable of endwise adjustment relative thereto, and a cutter-barrel journaled in said bearing and coöperating at its end with said block, substantially as set forth.

Witness my hand this 1st day of October, 1906.

CLAES A. SVENSSON.

Witnesses:

CARL F. GEYER,

E. M. GRAHAM.