

No. 736,783.

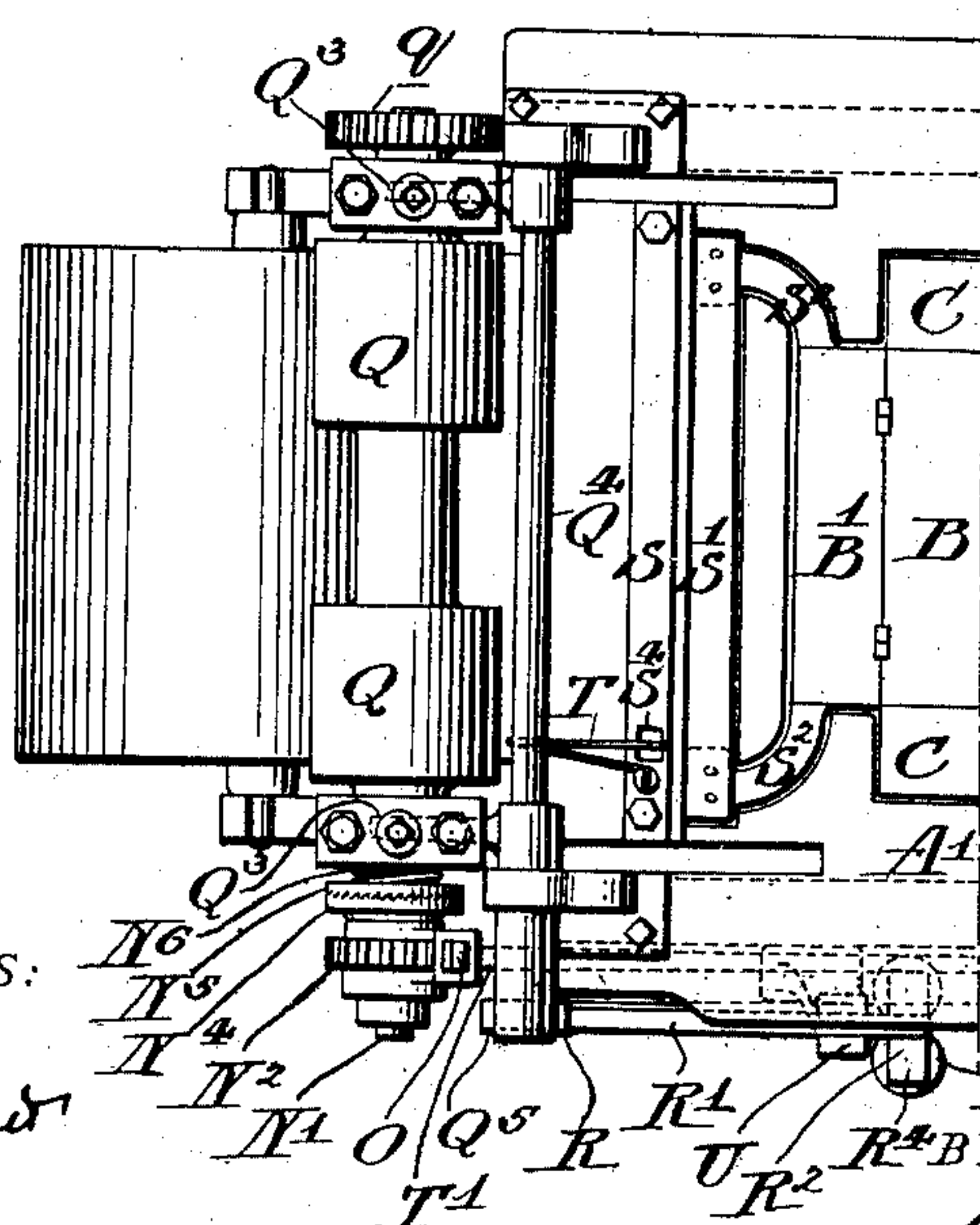
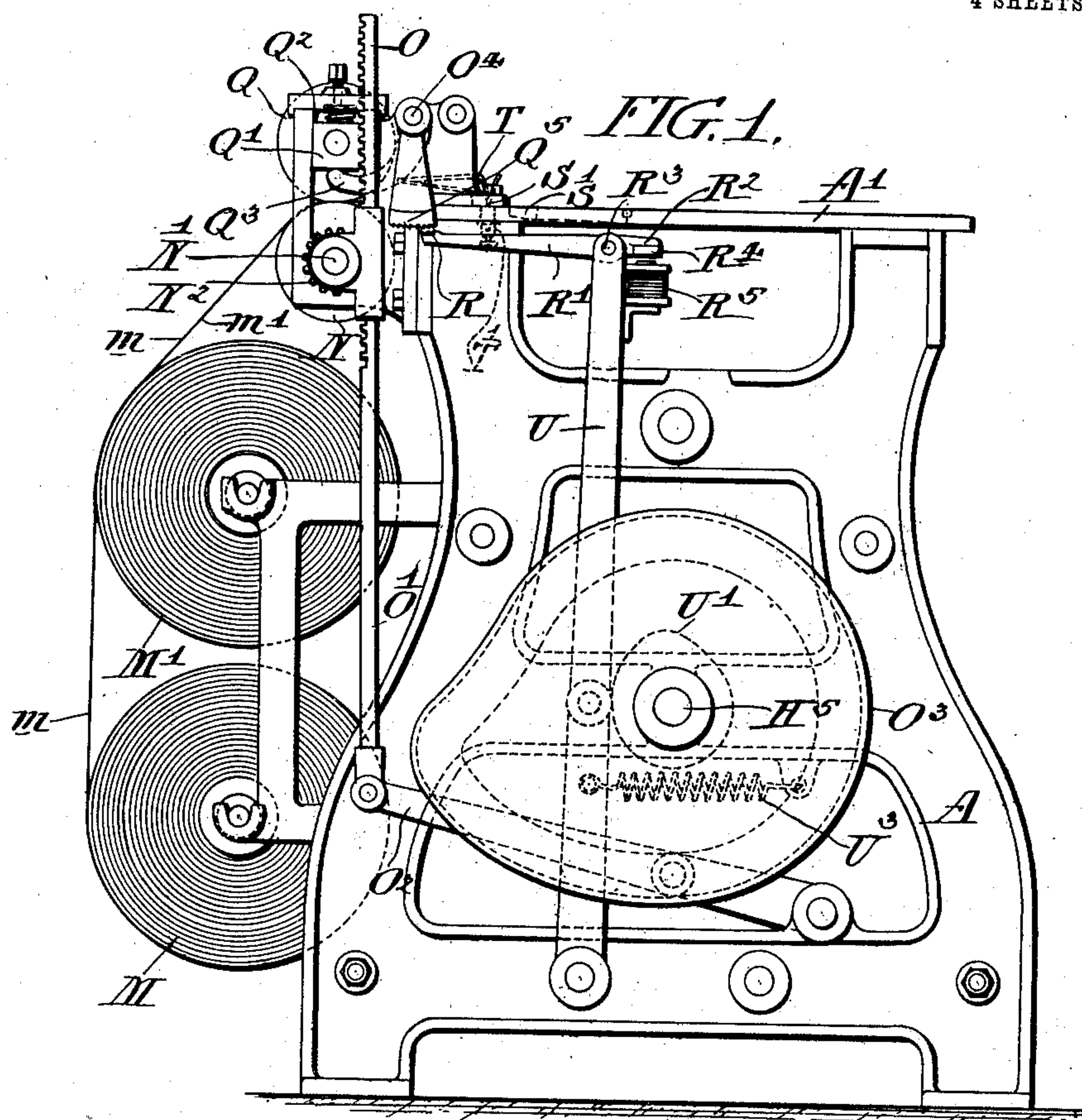
PATENTED AUG. 18, 1903.

J. E. ROBINSON & D. S. WILLIAMS.
PAPER BLANK CUTTING MECHANISM.

APPLICATION FILED SEPT. 17, 1902.

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES:

H. H. H.
William C. Cassard

INVENTORS

John E. Robinson
D. S. Williams
BY *Francis J. Chamberlain*
ATTORNEY.

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4 SHEETS—SHEET 2.

FIG. 4.

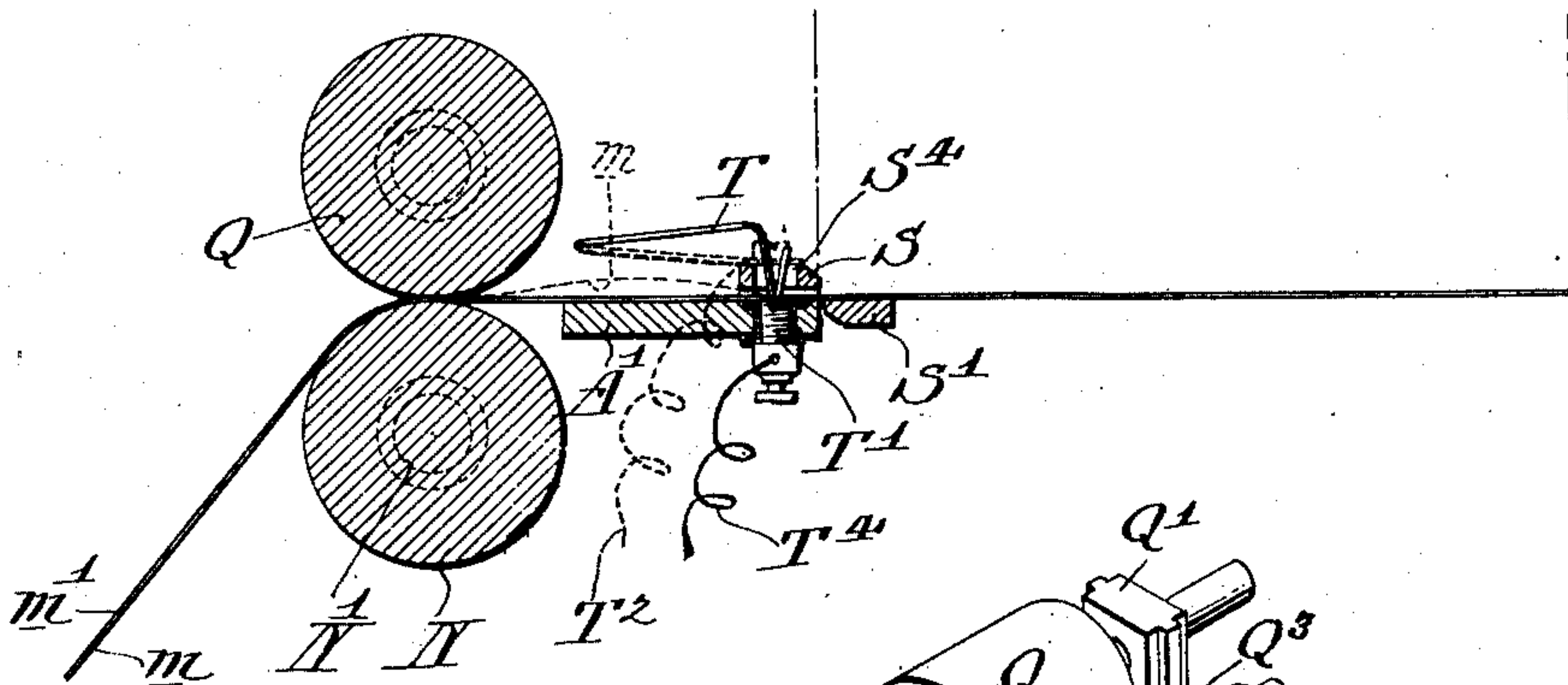


FIG. 3.

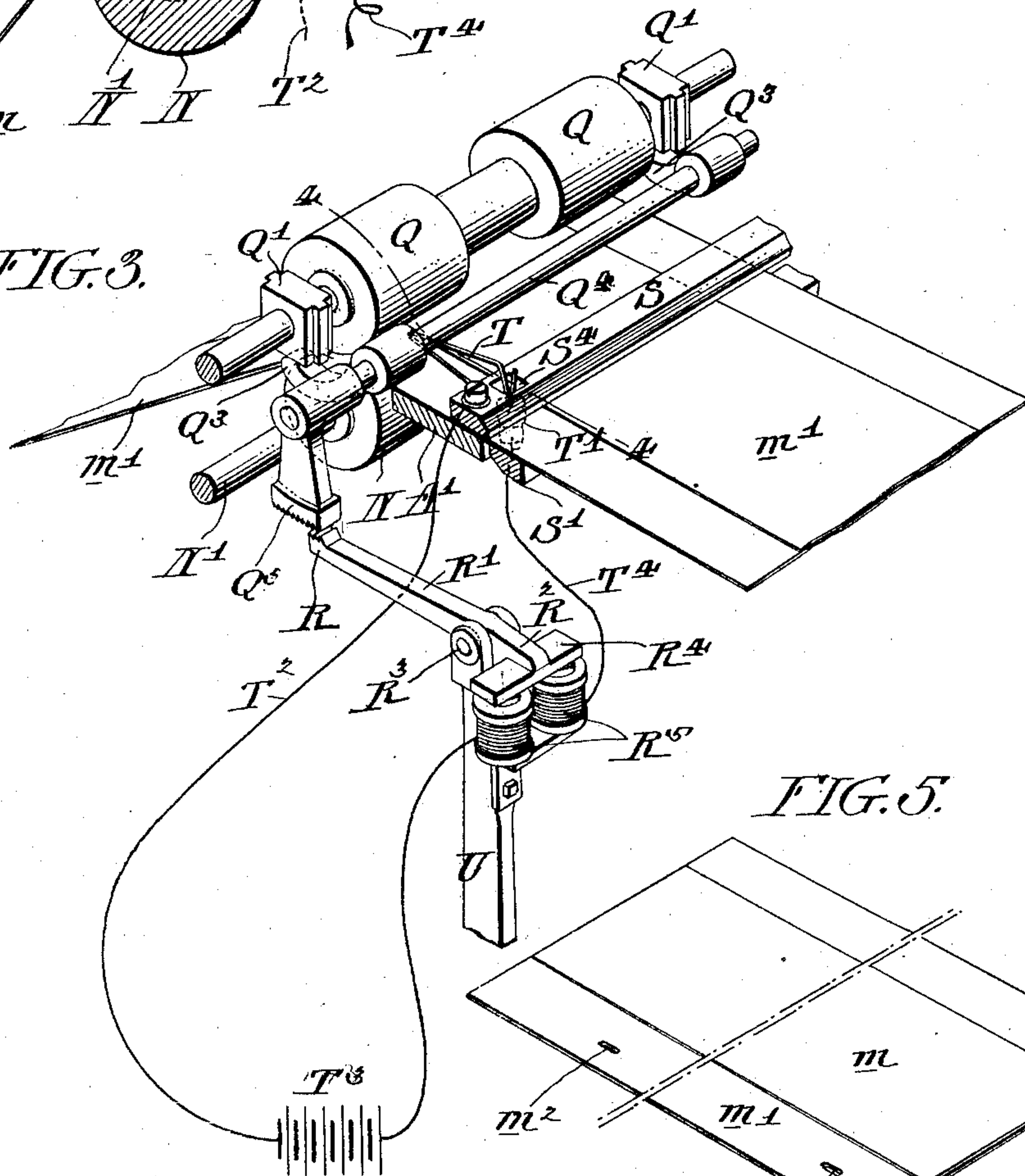
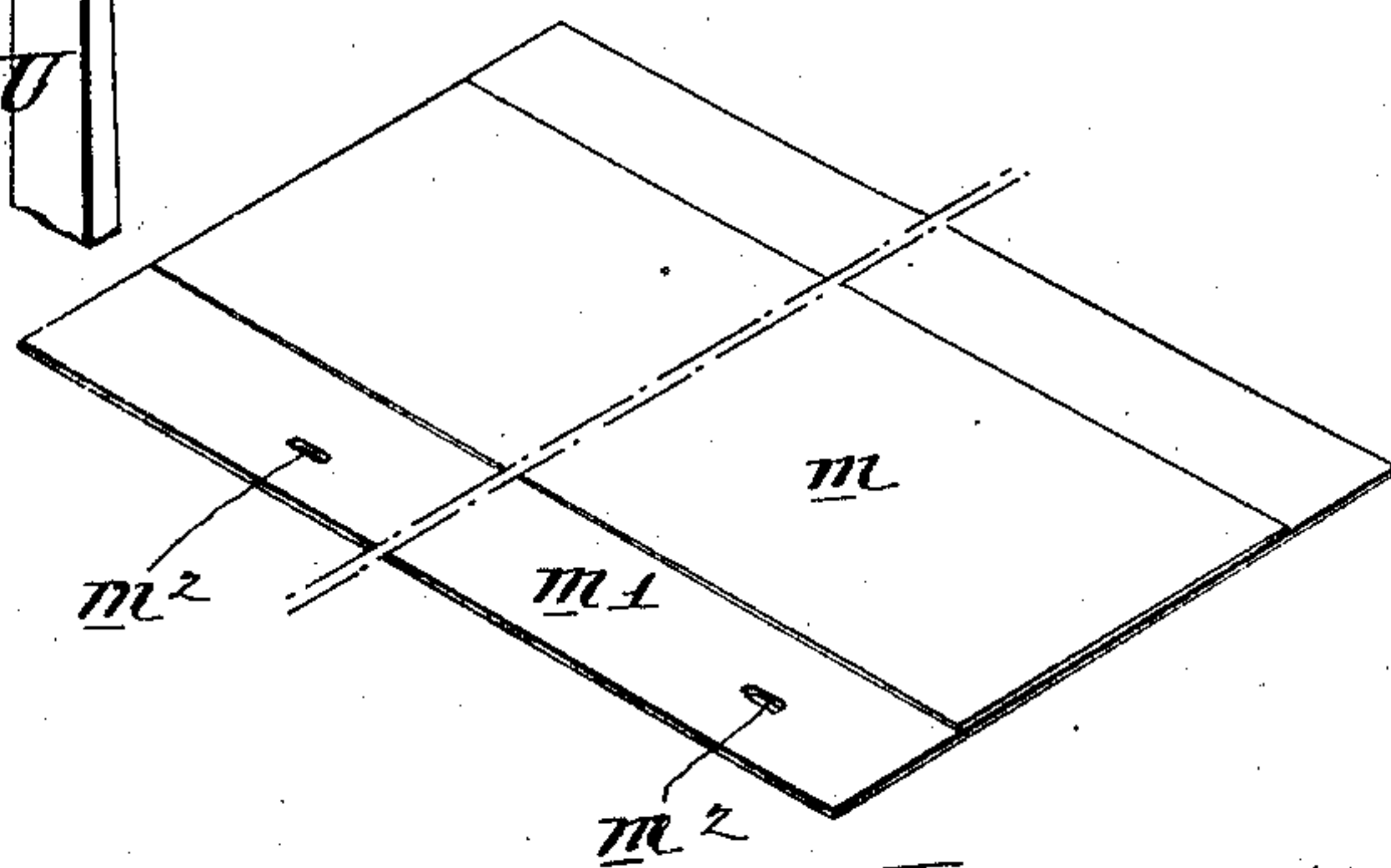


FIG. 5.



Witnesses:

H. H. H. H.
William C. Gasser

Inventors

John E. Robinson
David S. Williams
by their atty
James V. Chamber

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4 SHEETS—SHEET 3.

FIG. 6.

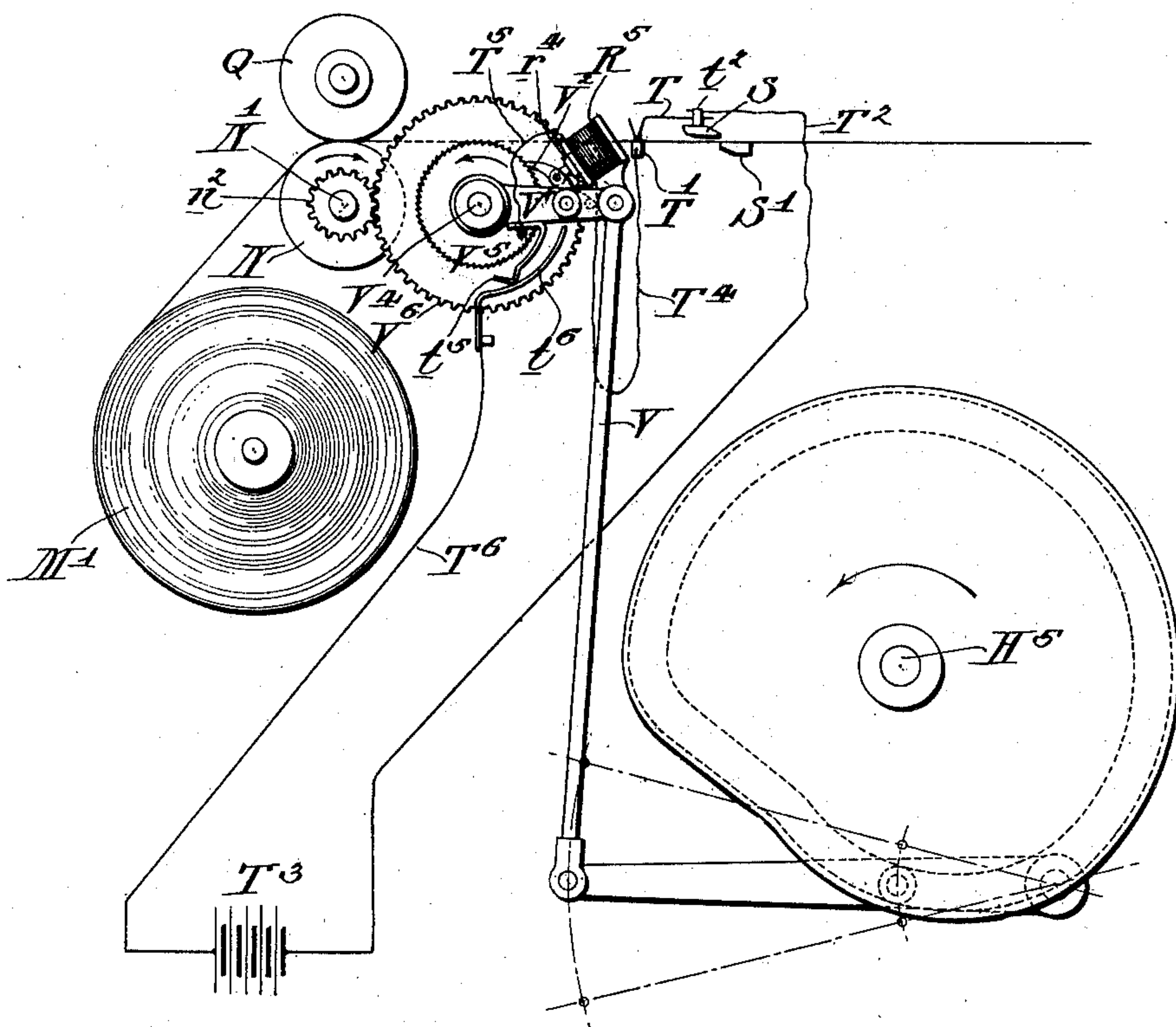
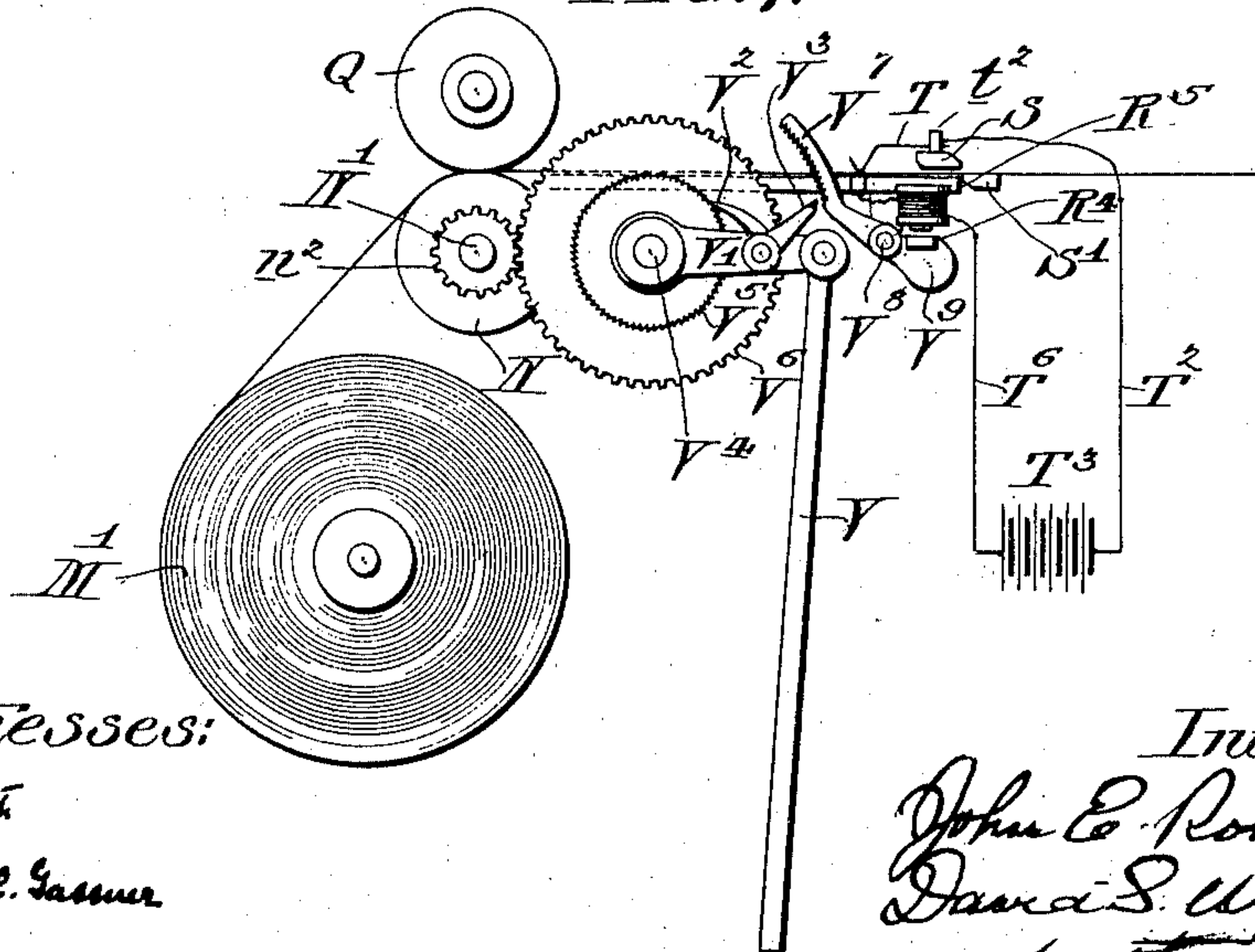


FIG. 7.



Witnesses:

W. H. H. H.
William E. Gassner

Inventors

John E. Robinson
David S. Williams
by their atty.
Francis J. Chambers

No. 736,783.

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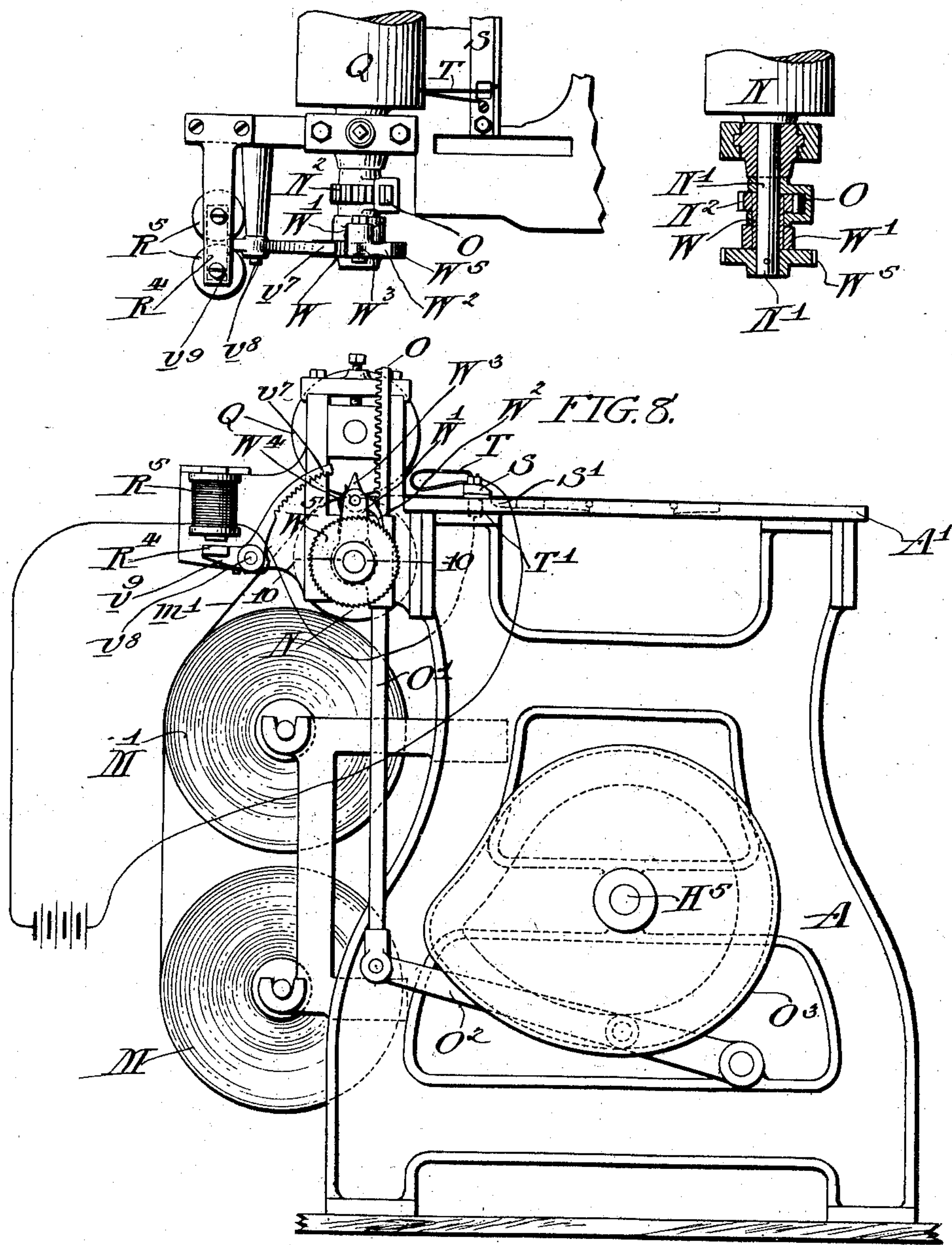
APPLICATION FILED SEPT. 17, 1902.

NO MODEL.

4 SHEETS—SHEET 4.

FIG. 9.

FIG. 10.



Witnesses:

Stewart
William C. Garrison

Inventors

Inventors
John E. Robinson
David S. Williams
by their atty
Francis J. Chambers

UNITED STATES PATENT OFFICE.

JOHN E. ROBINSON, OF PHILADELPHIA, AND DAVID S. WILLIAMS, OF
GLENSIDE, PENNSYLVANIA, ASSIGNORS, BY DIRECT AND MESNE
ASSIGNMENTS, TO NATIONAL PACKAGE MACHINE COMPANY, A
CORPORATION.

PAPER-BLANK-CUTTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 736,783, dated August 18, 1903.

Application filed September 17, 1902. Serial No. 123,731. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. ROBINSON, a resident of the city and county of Philadelphia, and DAVID S. WILLIAMS, a resident of Glenside, in the county of Montgomery, State of Pennsylvania, citizens of the United States of America, have invented a certain new and useful Improvement in Paper-Blank-Cutting Mechanism, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

Our invention relates to machinery in which blanks are cut from a web of paper, and is particularly adapted for use with machines adapted not only to cut the blanks, but also to use them, as for wrapping soap or any other purposes.

The special object of our invention is to enable a web of paper to be printed with labels, pictures, or the like, which it is desired to have appear upon the blanks and then to be severed into blanks having the printed matter properly disposed thereon, and we accomplish this by forming in the web of paper, at the time it is printed, a series of perforations occupying a definite position on the web with reference to the printed matter and constructing the paper-machine with intermittently-acting paper-feeding devices adapted to feed the paper forward to the cutters at each operation for a distance in excess of the proper length of a blank, and we further provide the machine with feed-interrupting mechanism arranged to be set in operation by the passage of the openings cut in the web of paper, thus insuring the stoppage of the feed mechanism with the printed matter always occupying practically the same relative position with regard to the cutters which operate upon the web during the intervals in the operation of the feed.

The nature of our invention will be best understood as described in connection with the drawings in which it is illustrated in various modified forms.

Figure 1 is a side elevation of a machine having our improvements. Fig. 2 is a plan

view of the same machine. Fig. 3 is a perspective view illustrating the feed-interrupting mechanism embodied in the said machine. Fig. 4 is a cross-sectional view through the feed-rolls, the cutters and the contact device of the interrupting mechanism. Fig. 5 is a perspective view of the portion of the web or webs of papers as they are delivered to the cutters. Fig. 6 is a side elevation showing a modified form of feed-interrupting mechanism. Fig. 7 is a side elevation showing still another modification in the feed-interrupting mechanism. Fig. 8 is another side elevation showing another modification of the interrupting mechanism, Fig. 9 being a plan view of a portion of the same, and Fig. 10 a horizontal section on the line 10 10 of Fig. 8.

A, indicates the frame of the machine, upon which, as shown, is supported a table A', and, within said table A', a table B, upon which the blanks are delivered when cut from the roll.

At B', and C, C, Fig. 2, are shown folding-plates, which form a part of a soap-wrapping device in connection with which we have used the blank-cutting device which forms the subject-matter of our present invention, but as this wrapping mechanism forms no part of our said present invention, we have omitted further illustration of it.

M, is a roll of the paper which forms the inner wrapper, the paper-web extending therefrom being indicated at *m*, and M', is a roll of paper consisting of a web which has been printed in the web with proper labels and simultaneously provided with cut-out perforations *m*², as shown in Fig. 5, the web of paper itself being indicated at *m*'. This roll, made up of a web of paper printed and provided with symmetrically-disposed perforations, is also our invention and forms the subject-matter of our patent application filed January 2, 1903, Serial No. 137,405.

N, and Q, are feed-rolls, through which the webs of paper pass, and which draw them from the rolls M M', and deliver the web forward over the table A', the webs of paper passing under a cutter, indicated at S, and over a cutter, indicated at S', said last-mentioned cutter

being given, at proper intervals, an upward motion so as to cut off the paper against the cutter S. As shown, the cutter S', is secured on pivot-arms S², which are given the proper
 5 rocking motion by mechanism not herein shown and which may, indeed, be of any convenient character. The cutter S, as shown, is formed with a perforation S⁴, through which extends one of the contact-fingers T', to be
 10 hereinafter described.

Returning to the mechanism immediately connected with the feed-rolls, as shown in Figs. 1, 2, 3 and 4, the lower roll N, is journaled on a shaft N', which shaft has secured
 15 to it a gear-wheel N², and also a clutch member indicated at N⁴, which clutch member is in engagement with another clutch member N⁵, held in contact with it by a spring N⁶ and secured to rotate with the feed-roll N. The
 20 character of the clutch is such that a forward rotary motion of the shaft N', will carry with it the feed-roll, while a rearward rotary motion of the shaft will not affect the said roll. A rotating motion is given to the gear-wheel
 25 N², and through it to the shaft N', by a reciprocating rack O, secured on a rod O', which at its bottom, is secured to a pivoted lever O², having a cam-roll in engagement with the cam O³, on the shaft H⁵.

The upper feed-roll Q, is secured on a shaft which is driven through a gear-wheel q, by a corresponding gear-wheel on the shaft N', which, as shown in Fig. 2, lies below gear q and therefore does not show. The shaft in
 35 feed-roll Q, is supported in bearing-blocks, indicated at Q', which are normally pressed down by springs Q², and have extending below said bearings, lever-arms, indicated at Q³, Q³, which are secured to a rock-shaft Q⁴, having depend-
 40 ing from it an arm Q⁵, with serrated teeth at its bottom. R, is a toothed end of a lever R', R², pivoted at R³, to a lever U, and having secured to the arm R², an armature indicated at R⁴, supported immediately above an electro-
 45 magnet R⁵, secured also on the lever-arm U.

T, is an electric contact consisting of a spring secured to the cutter S, and having a bent portion extending down through the opening S⁴, in said cutter so as to normally rest on the
 50 web m', or on the electric contact T', secured immediately below the opening S⁴, and connecting with the electromagnet through the wire T⁴, the contact T, acting also, with the electromagnet through the conduit T², in
 55 which is situated the battery T³. The lever-arm U, is given an oscillating movement by cam U', on the shaft H⁵, being held in contact therewith by the spring U³.

The normal forward motion of the feed-rolls N, and Q, imparted by the mechanism described is somewhat in excess of the length
 60 of the blank to be cut from the web of paper, but as soon as one of the openings m², registers with the electric contacts T, T', said contacts close the circuit, energizing the magnet R⁵, and drawing down through the armature R⁴, the end R², of the lever R', R², thereby rais-

ing the toothed end R, of the arm R', so that it comes in contact with the toothed arm Q⁵, and, when the lever-arm U, is moved back-
 70 ward by its cam U', the shaft Q⁴ is turned downward, raising the arms Q³, Q³ which, pressing against the shaft-bearings Q', Q', raise them and the feed-roll Q, out of opera-
 75 tive relation with the feed-roll N, thereby interrupting the feed and insuring that the operation of the cutters S, S', will sever a blank on a line bearing a fixed determined relation-
 80 ship to the printed matter and to the openings m'.

It will be obvious that our invention is capable of embodiment in very many forms of apparatus without departure from its essen-
 85 tial features. Thus, for instance, in Fig. 6, the feed-roll N, which may be assumed to be positively geared with the feed-roll Q, and to be fixed to its shaft N', is actuated through a gear n², fixed on the shaft N', through a gear V⁶, which is journaled on a shaft V⁴, and has secured to its end a ratchet-wheel V⁵.
 90

V', is a lever-arm pivoted on the shaft V⁴, and actuated through a connecting-rod V, by a cam, such, for instance, as is indicated in Fig. 6. The lever-arm V', has pivoted upon it a pawl V² which is normally in contact
 95 with the ratchet-wheel V⁵, but which has attached to it an armature r⁴, placed in operative relationship with an electromagnet R⁵, said electromagnet being situated in a circuit having closing terminals such as already
 100 described. The operation of this device is to impart an intermittent forward rotary movement to the feed-rolls, the stroke of the lever-arm V', being sufficient to give a motion to the paper somewhat in excess of the paper-
 105 feed, the pawl V², being withdrawn from operative position by the energizing of the magnet due to the closing of the circuit which occurs, as before, when the electric contacts come above and below the opening l², in the
 110 web of paper.

As shown in Fig. 6, a circuit-wire T⁵, leading from the electromagnets connects with a spring-contact t⁵, which moves in contact with another spring-contact t⁶, electrically con-
 115 nected with a wire T⁶, leading to the battery T³, from which another wire T², connects through a post t², with the spring-terminal T.

In Fig. 7, the device is very similar to that shown in Fig. 6, except that the pawl V², is
 120 provided with a projecting arm V³. The electromagnet is, in this modification, secured to the frame of the machine, and the armature R⁴, coupled to the arm V⁹, of a lever V⁷, V⁹, pivoted on a fixed support at V⁸, and having
 125 its arm V⁹, serrated so as to engage the arm V³, of the pawl when the lever is moved by the electromagnet. It will readily be seen how this engagement will at once disengage the pawl V², from the ratchet-wheel V⁵, and arrest
 130 the motion of the feed-rolls.

In the modification illustrated in Figs. 8, 9, and 10, the feed-roll N, is secured to the shaft N', which has also secured to it a ratchet-

wheel W^5 . The gear-wheel N^2 , actuated by the rack O , is secured on a sleeve W , to which is also attached the lever-arm W' , supporting at its upper end a pawl W^2 , having a projecting arm W^3 , and normally held in contact with the ratchet-wheel by a spring W^4 . In this construction of course, the feed is determined by the extent of the oscillation imparted to the arm W' , but is interrupted when the pawl W^2 is drawn out of contact with the ratchet-wheel, and this disengagement of the pawl is effected by the toothed arm v^7 , of a lever v^7, v^9 , pivoted at v^8 , and carrying an armature R^4 , in operative relationship to the electromagnet R^5 .

The modifications illustrated and described will be sufficient to indicate the broad scope of our invention which, as we have already stated, is capable of embodiment without departure from its essential principles, in a great number of forms of apparatus.

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

1. In a machine for cutting blanks from a web of paper, the combination with blank-cutters, of paper-feeding mechanism, adapted to intermittently draw the web of paper forward to the cutters and for a distance in excess of the length of a blank, and mechanism for interrupting the feed, arranged to be set in op-

eration by the passage of perforations cut in the paper-web.

2. In a machine for cutting blanks from a web of paper, the combination with blank-cutters, of paper-feeding mechanism, adapted to intermittently draw the web of paper forward to the cutters and for a distance in excess of the length of a blank, and mechanism for arresting the motion of the feed mechanism, arranged to be set in operation by the passage of perforations cut in the paper-web.

3. In a machine for cutting blanks from a web of paper, the combination with blank-cutters, of paper-feeding mechanism, adapted to intermittently draw the web of paper forward to the cutters and for a distance in excess of the length of a blank, mechanism for interrupting the feed, comprising an electric circuit and electromagnetic devices which actuate the interrupting mechanism, and contact-terminals of said circuit arranged in the path of the paper-web and whereby the circuit is closed and opened by the passage of perforations cut in the web.

JOHN E. ROBINSON.
DAVID S. WILLIAMS.

Witnesses:

CHAS. A. MYERS,
D. STEWART.