

(No Model.)

2 Sheets—Sheet 1.

G. W. SNYDER.

AUTOMATIC FEED STOP FOR KNITTING MACHINES.

No. 501,582.

Patented July 18, 1893.

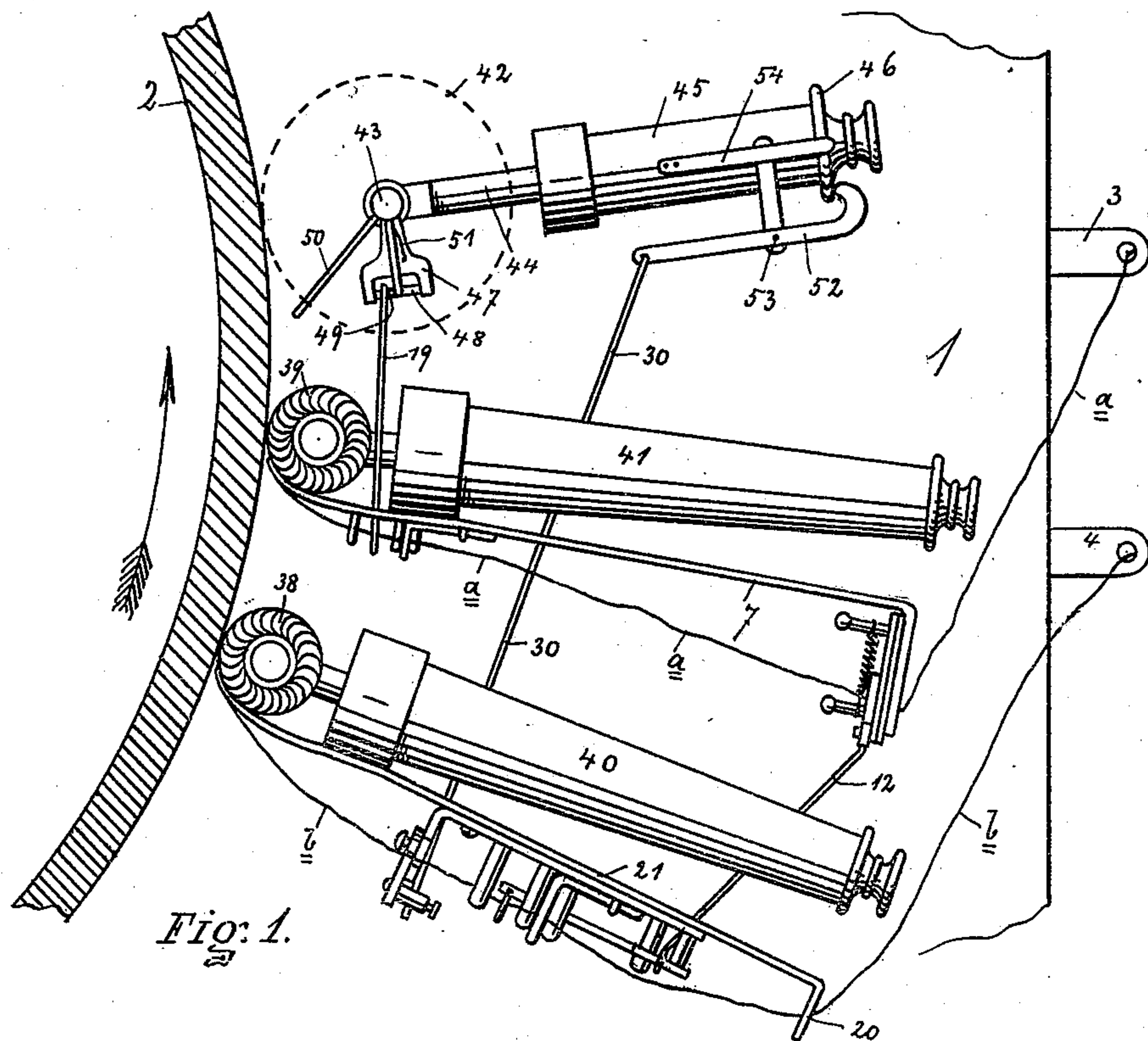


Fig. 1.

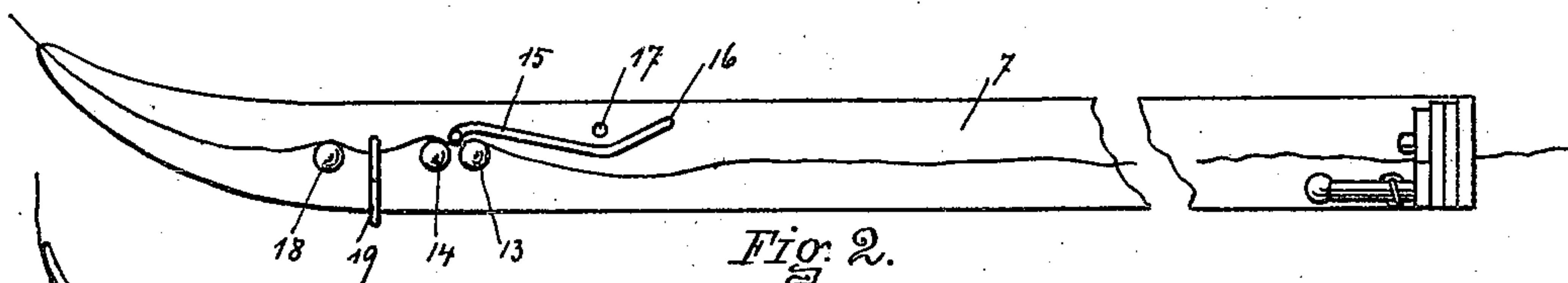


Fig. 2.

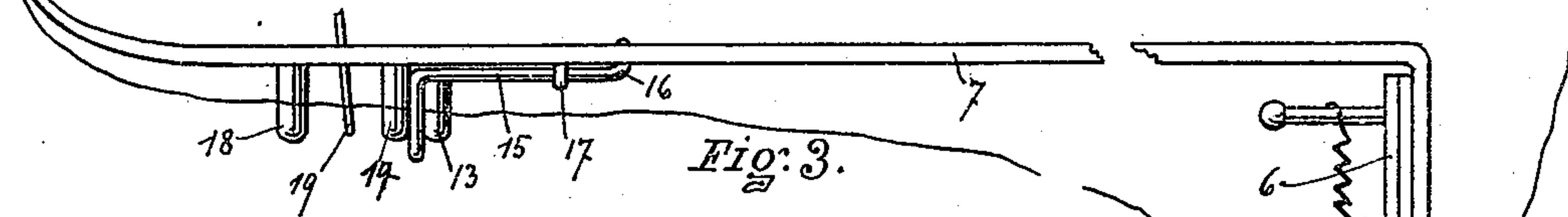


Fig. 3.

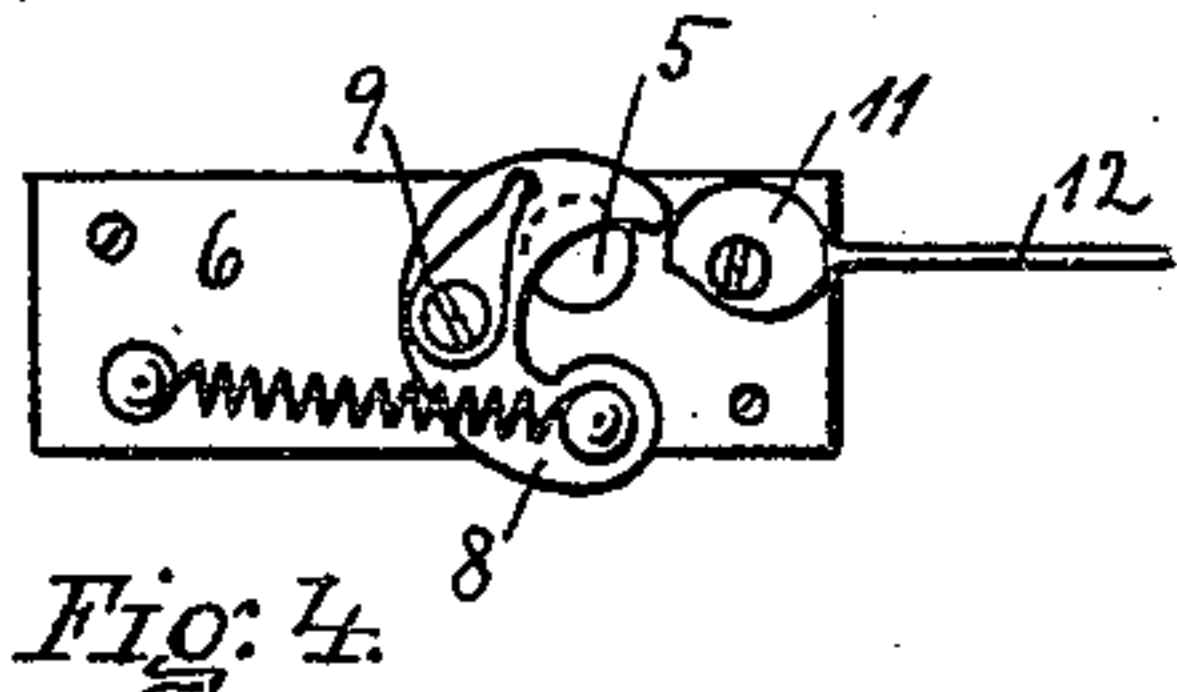


Fig. 4.

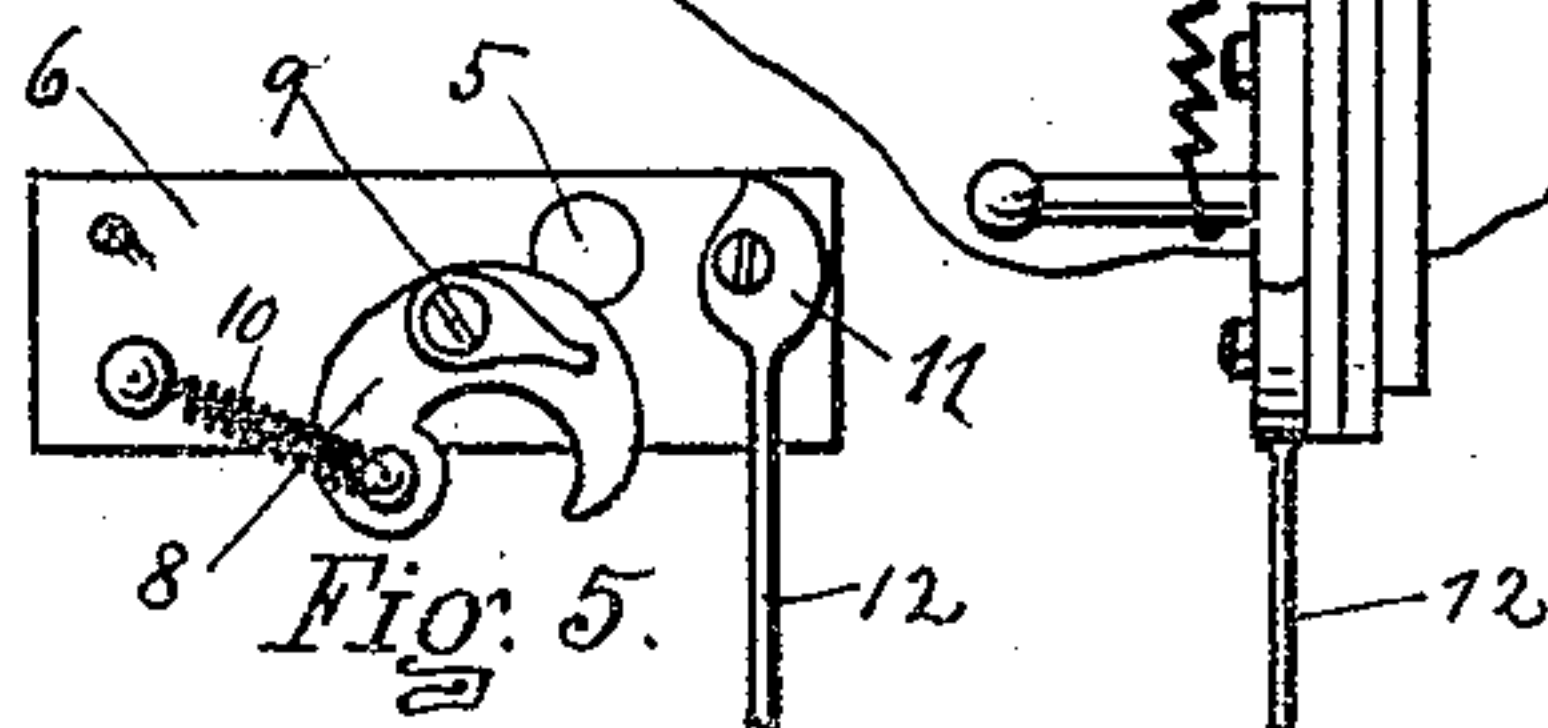


Fig. 5.

WITNESSES.

Rich. A. George.

Martin G. Hunkel

INVENTOR.

GEORGE W. SNYDER.

By Risley & Robinson

ATTORNEYS

(No Model.)

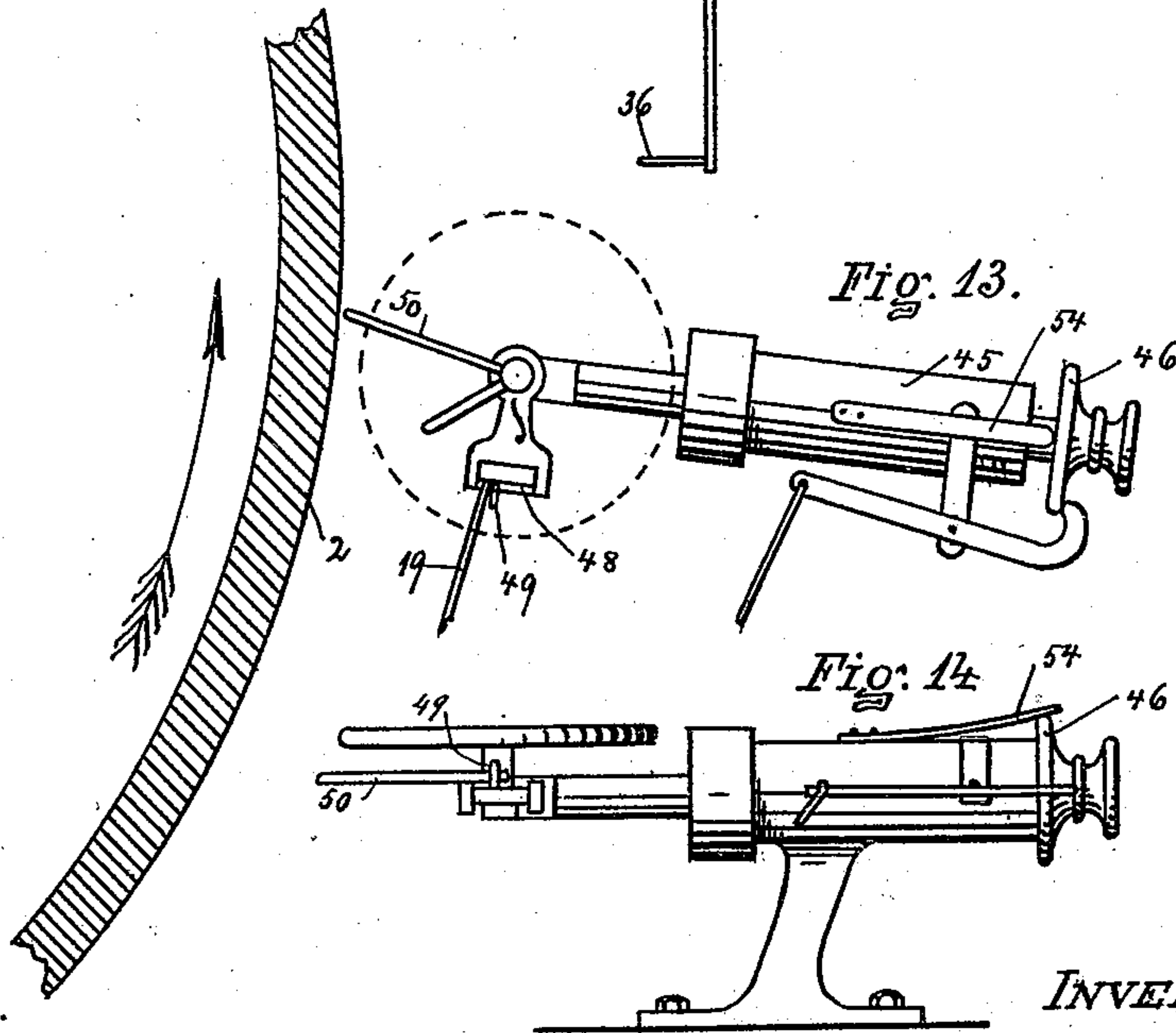
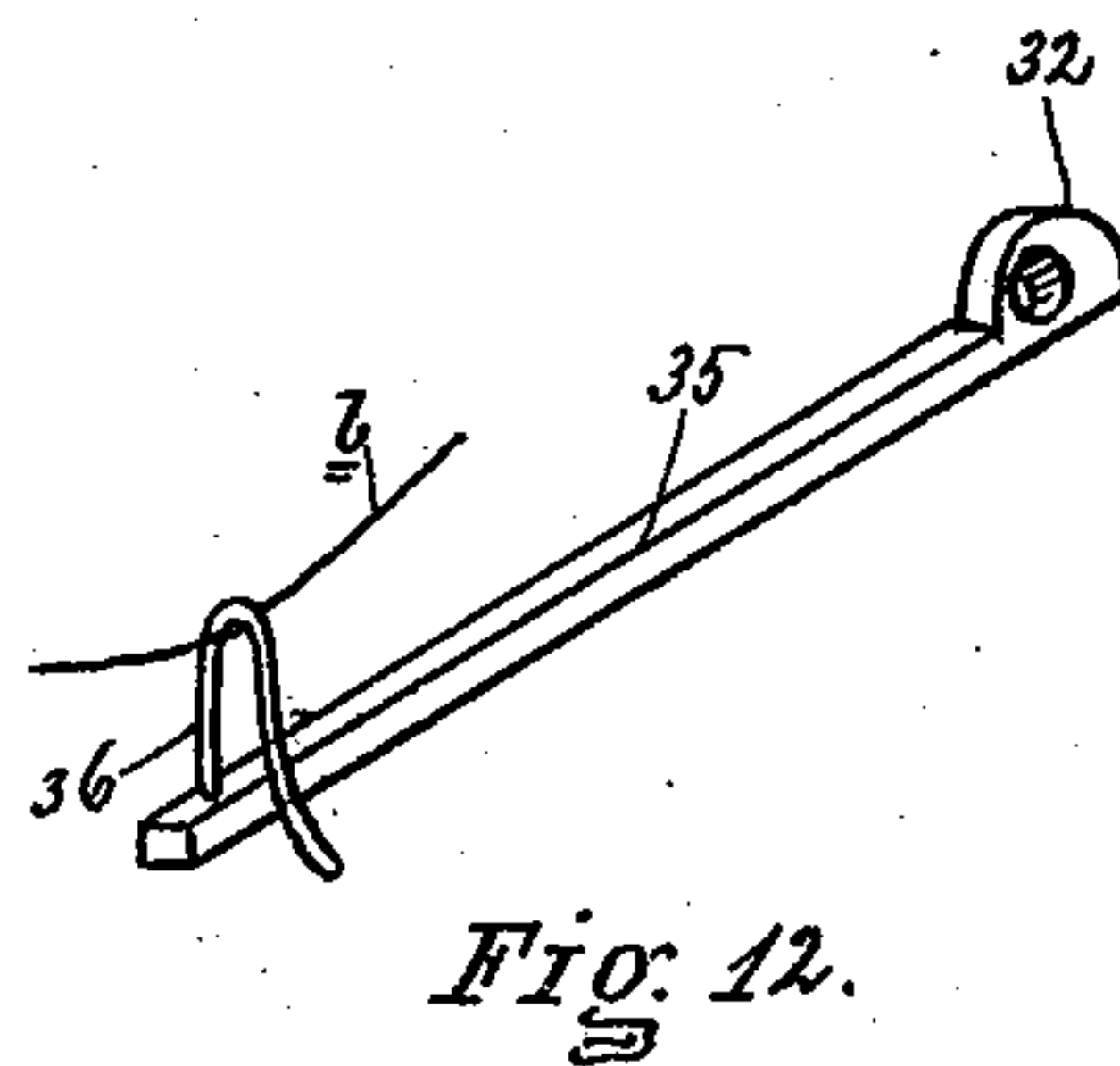
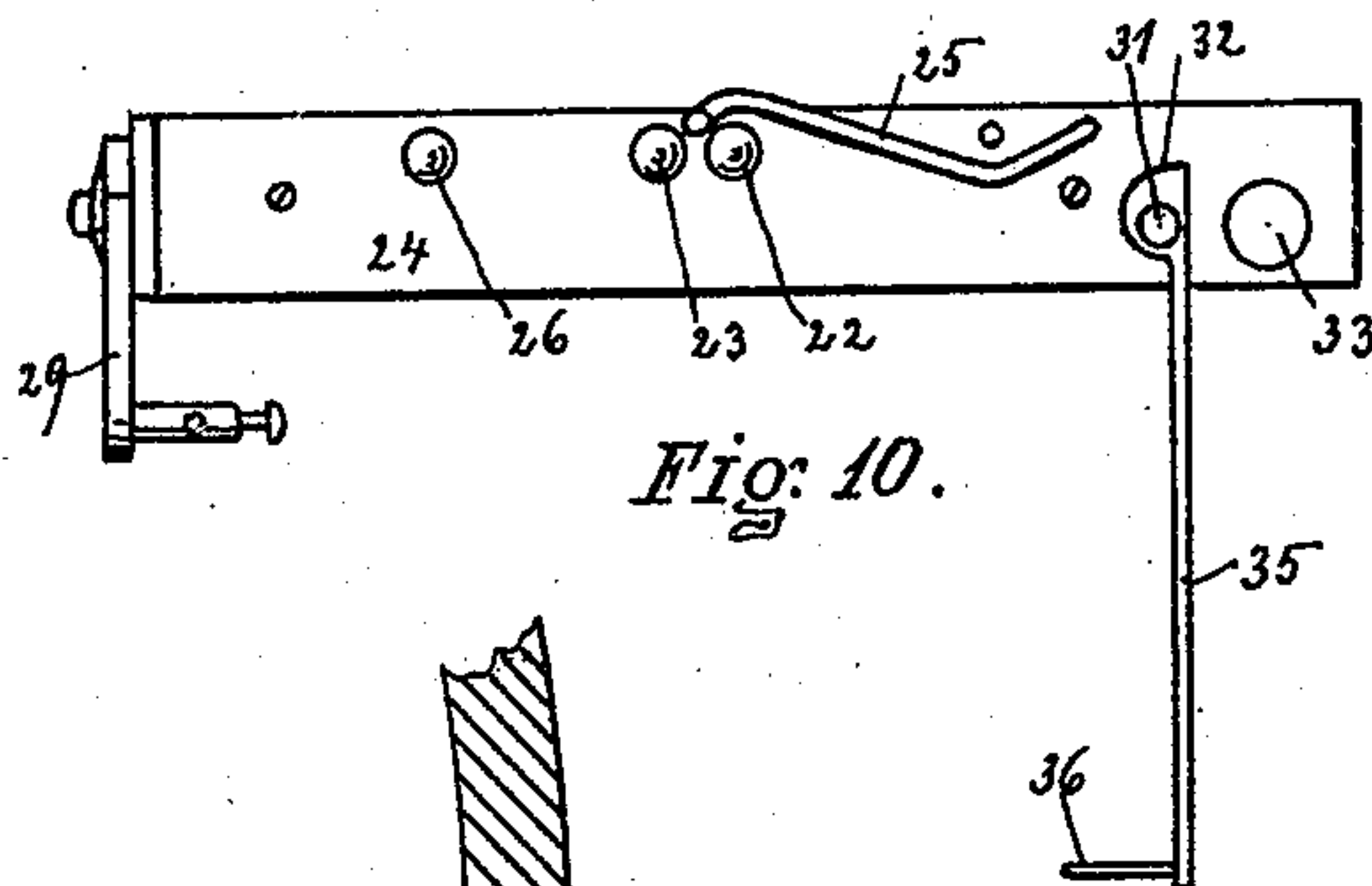
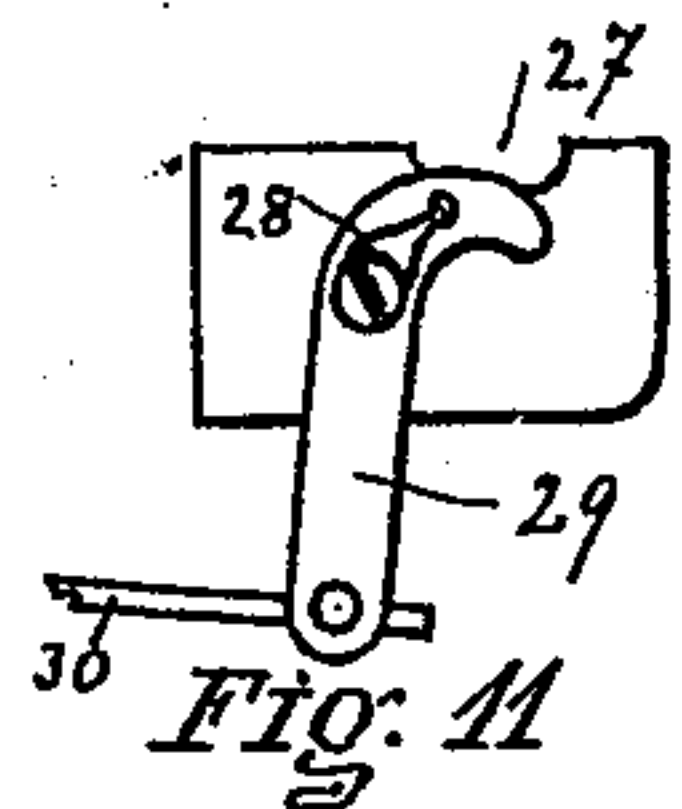
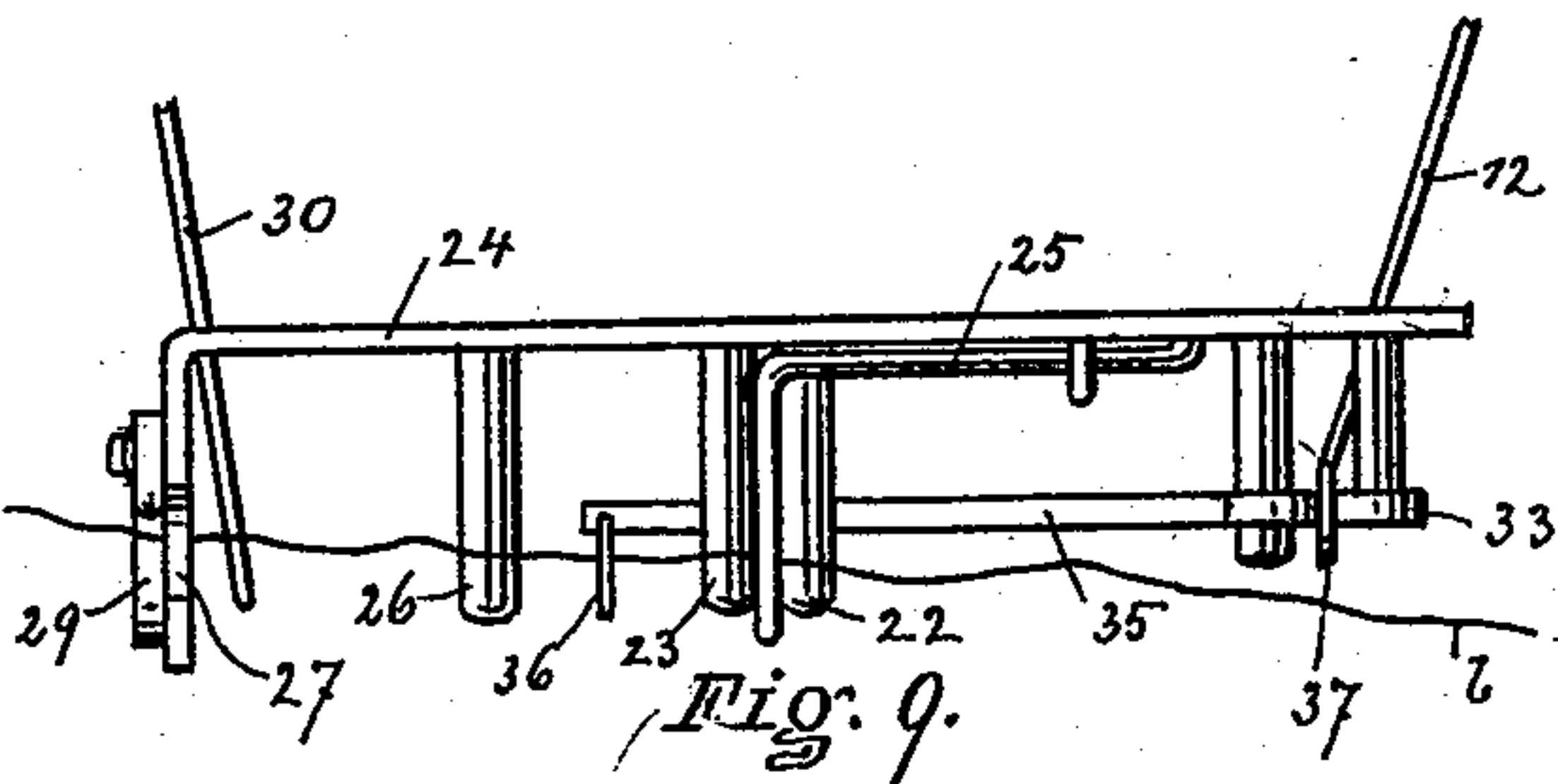
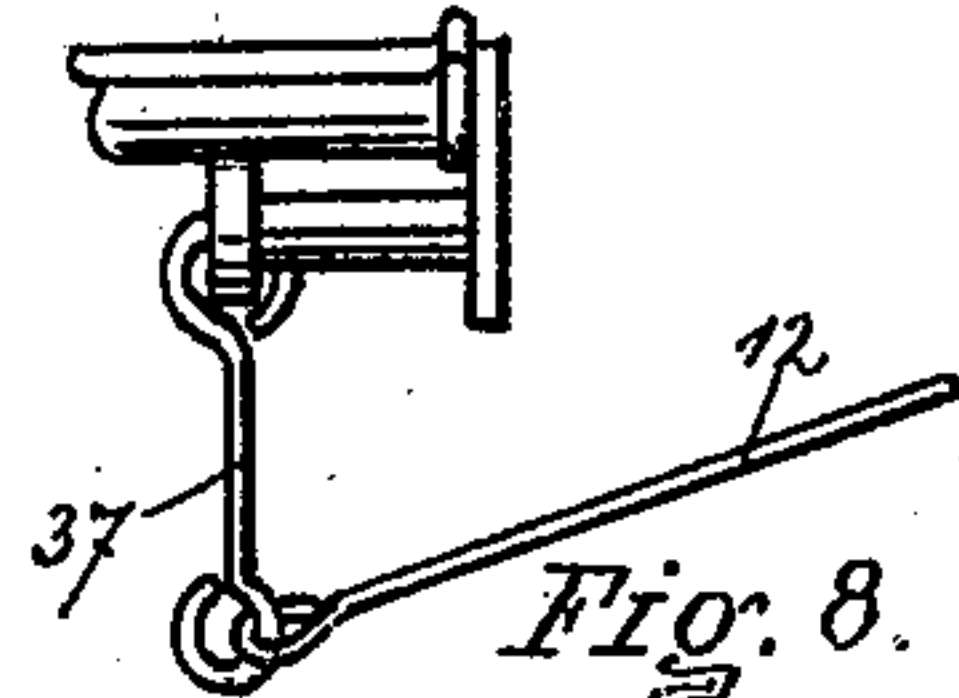
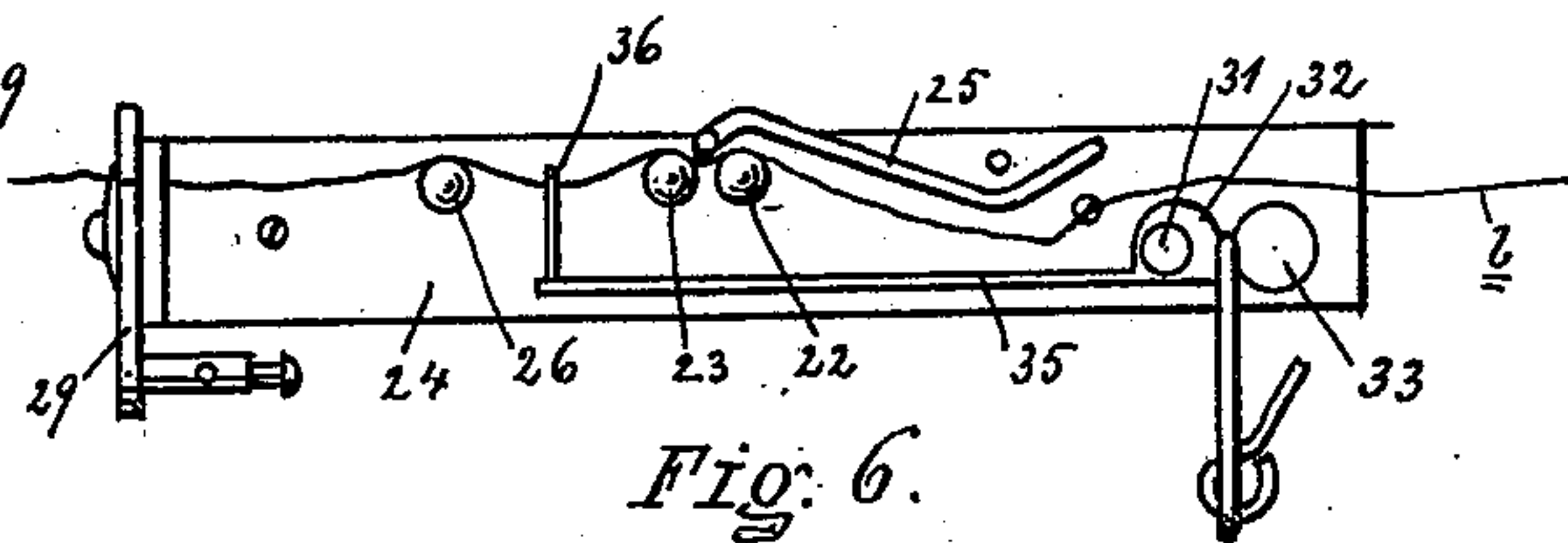
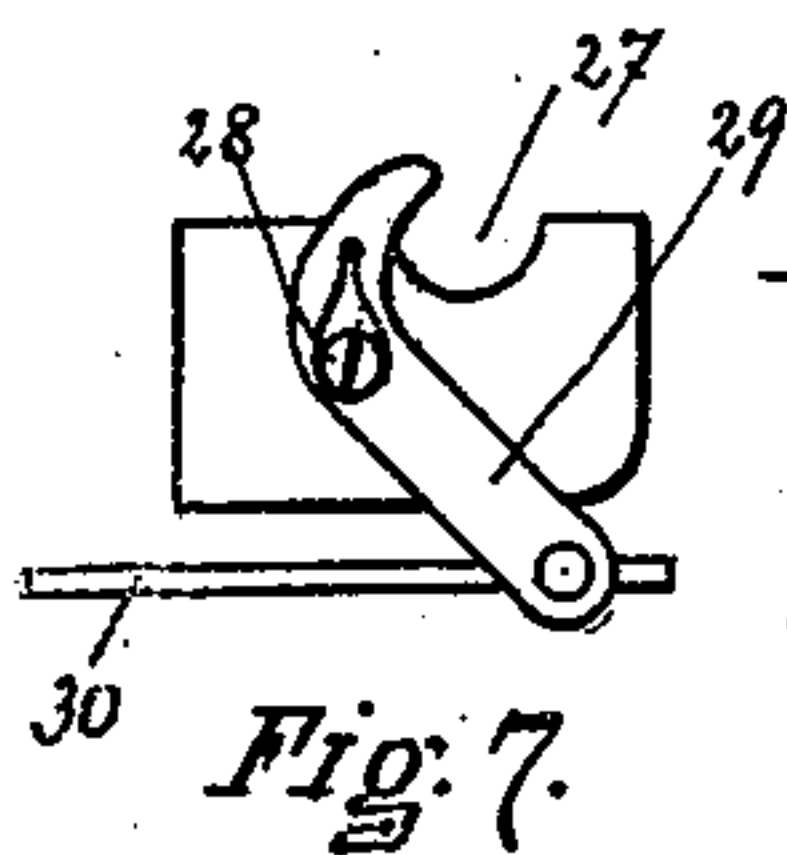
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WITNESSES.

Rich. A. George.

Martin B. Hummel

INVENTOR.

GEORGE W. SNYDER.

By Risley & Robinson

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

GEORGE W. SNYDER, OF HERKIMER, NEW YORK.

## AUTOMATIC FEED-STOP FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 501,582, dated July 18, 1893.

Application filed March 24, 1893. Serial No. 467,403. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. SNYDER, of Herkimer, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Automatic Feed-Stops for Knitting-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 the letters and figures of reference marked thereon, which form part of this specification.

My present invention relates to devices for automatically cutting the yarn and discontinuing the feed on a rotary knitting machine.

The device is also applicable with certain modifications to other knitting machines than rotary ones.

In the drawings which accompany and form a part of this specification and in which similar letters and figures refer to corresponding parts in the several views, Figure 1 shows a plan view of a portion of the table and cylinder of a rotary knitting machine showing the mechanism for feeding yarn to the needles and including my device for cutting the yarn and automatically throwing out the feed. Figs. 2, 3, 4, and 5, show details. Fig. 6, shows details relating to one of the shearing knives for cutting the yarn and to the tension device for holding the yarn under tension more particularly described hereinafter. Fig. 7, shows a shearing knife and portion of its connections. Fig. 8, shows details. Fig. 9, shows plan view of the parts shown in Fig. 6. Fig. 10, shows the parts shown in Fig. 6, after the yarn has been cut or broken. Figs. 11, and 12, show details. Fig. 13, shows details of the stand for carrying the presser with details for automatically cutting the yarn and discontinuing the feed. Fig. 14, shows a side view of the device shown in Fig. 13.

Referring more particularly to the reference numerals in a more specific description of the device, 1 indicates the table of an ordinary rotary knitting machine. 2 shows the general outline of the cylinder which carries the needles and to which the yarns are fed.

The device herein shown is intended for

feeding two yarns to the needles at the same time, and it will be understood that three or four of the devices substantially as shown in Fig. 1, may be located at intervals on the table around the cylinder and be feeding to the same cylinder at the same time. The several feeding devices would be duplicates of the one here shown. The yarns "a" and "b" come to the table through eye plates 3 and 4 provided on the edge of the table from spools or bobbins located beneath the table. The yarn "a" passes through an opening 5 in the shearing plate 6, mounted upon the rear end of the yarn feeder guide 7 which feeder guide projects close up to the cylinder, and is provided with an eye in its end through which the yarn is fed. On the shearing plate 6, is mounted a curved shearing knife 8, adapted to shear by the opening 5 and cut a yarn passing through the opening when the knife is brought into operation. The knife 8 is pivoted to the shearing plate at 9, and is operated by a spring 10. The swinging end of the knife 8, is adapted to engage and be held by a cam 11 also pivoted on the plate 6 and provided with an arm 12. In Fig. 4, the knife is shown set and held by the cam 11, and in Fig. 5 it is shown after having cut the yarn. The yarn "a" after passing through the shearing plate and under the shearing knife 8, passes over a pair of guide pins 13 and 14, secured in the feeding finger 7, nearer to the cylinder. Resting on the yarn between the pins 13 and 14 is a gravity tension 15 pivoted on the finger at 16 and capable of a slight vertical swinging movement limited by the pin 17. After passing the tension device as just described, the yarn passes over a yarn supporter pin 18, also fixed in a finger 7, and on the yarn between the pins 14 and 18 is adapted to engage the swinging end of a light arm or wire 19. The yarn "b" after passing through the eye in plate 4 secured on the edge of the table passes through an eye at 20 in the rear or outer end of the yarn finger 21, and thence over tension pins 22, and 23 similar to those before described, secured in a base plate 24, which base plate is fixed on the yarn finger 21. On the yarn between the pins 22 and 23 is adapted to rest a gravity yarn tension 25 similar to 15 before described. From pin 23, the yarn



passes over pin 26, also secured in the base plate 24, and thence through a "U" shaped opening 27, on an "L" shaped part of the base 24. The "U" shaped opening 27, is provided  
 5 with a shearing edge and pivoted at 28 thereon is provided a shearing lever 29 adapted to shear by the "U" shaped depression 27 and cut a thread or yarn running therein. The shearing lever 29 is operated by a connection  
 10 30, extending to a lever on the presser stand. Pivoted at 31 on the plate 24 is provided a cam 32, which is opposed to the head of a fixed pin 33 in the plate 24. The cam 32 is provided with an arm 35, which extends to a  
 15 point between the pins 23 and 26 and is provided with the hook 36, adapted to engage the yarn "b" between the pins 23, and 26, and be supported thereon. The cam 32, is adapted to receive and secure between itself and the  
 20 pin 33, the link 37, provided on the end of the arm 12 by engaging in the eye provided on the end thereof. The yarn "b" after passing through the "U" shaped depression 27, passes through an eye in the end of finger 21 and is  
 25 fed to the needles on a cylinder, all in the usual manner.

At 38 and 39 are shown rotary sinkers for operating on the yarns "b" and "a" respectively in the usual manner, and these sinkers  
 30 are mounted on spindles projecting into spring carrying barrels 40 and 41 respectively, all in the usual manner.

At 42 is shown in dotted outline the rotary presser for closing the barbs of the needles in  
 35 the process of knitting as is common in rotary knitting machines. The presser is mounted upon a spindle 43. The spindle 43 is carried on the end of a sliding stem 44, projecting from the barrel 45. Within the barrel is provided a spring in the usual manner for forcing  
 40 the presser 42 against the needles.

46 is a cap provided on the outer end of the stem 44, for confining the spring and limiting the movement of the stem 44 and attached parts toward the needles; also mounted  
 45 on the inner end of stem 44, is a fork 47 in the ears of which is mounted a rocking shaft 48 on which the arm 19 is rigidly secured and provided with a substantially vertical projecting pin 49. On the pin 49, is  
 50 adapted to engage one arm of the bell crank throw out 50. This bell crank throw out is mounted and pivoted upon the spindle 43, and is operated by a spring 51, when not secured by one arm being in contact with the  
 55 pin 49. On the cap 46 engages the one end of bent lever 52, which lever is pivoted at 53 to a projection from the presser stand 45, and has connected at its opposite end the connecting rod 30 above mentioned. On the top  
 60 of the presser stand 45 is provided a spring 54 having its vibrating end adapted to engage the cap 46 and hold the cap and spindle 44, against the tension of the spring in the  
 65 barrel of the presser stand 45, and hold the presser 42 out of engagement with the needles, substantially as shown in Fig. 13.

The parts when in full operation are substantially in the position shown in Fig. 1, and the functions of the device are performed substantially as follows: If the yarn "a" be-  
 70 comes broken, as the broken end passes the tension device 15 the support of the arm 19, being removed it will drop by its own gravity and will rock the shaft 48 to throw the pin 49  
 75 out of engagement with the arm of the throw-out 50. When the throw-out 50 is no longer held by the pin 49, the spring 51 swings the long arm into engagement with the cylinder 2, which is traveling in the direction of the  
 80 arrow in Fig. 1. As it becomes so engaged with the cylinder, its swinging about from the position shown in Fig. 1, to the position shown in Fig. 13, throws back the presser 42 from the needles and throws out the cap 46,  
 85 until the spring 54, becomes engaged behind the cap and holds the presser out of engagement with the needles. At the time the cap 46 is thrown out by operation of the lever 52 and connection 30 the shearing lever 29 is op-  
 90 erated to cut the yarn "b" passing through the other yarn guide Fig. 21, and this discontinues both yarns to the cylinder.

It may be remarked here that in cases where one or the other of the yarns "a" and "b" is  
 95 continued to be fed, after one of them is broken and discontinued, a defective and useless fabric is made, but where both of the yarns are discontinued at substantially the same time the fabric is not injured, as either  
 100 there will be no fabric whatever knit, or the fabric knit from the threads fed at other points on the cylinder will form a perfect fabric. In case the yarn "b" becomes broken during the process of knitting and  
 105 the several parts are set up in the position shown in Fig. 1 as the broken end finally passes over pins 22, and 23, on the tension device the swinging arm 35, will have its support removed and will swing by its own gravity down-  
 110 ward so as to release the link 37 and the arm 12. The arm 12 having its support removed swings down by its own gravity and turns the cam 11, on its pivot, so as to release the shear-knife 8, which is instantly operated by  
 115 the spring 10 and cuts or severs yarn "a," passing through the opening 5 and this discontinues this yarn upon the breakage of the yarn "b." It will therefore be noted, that upon the breakage of either of the yarns the  
 120 device will automatically cut the other yarn, and entirely discontinue the feed. It will also be noted that when the yarn "a" is cut, by the shearing knife 8, the support for the arm 19, controlling the presser is removed and  
 125 the presser will automatically be thrown out of operation as before described when the yarn "a" was broken instead of being cut.

It is not essential that the cutters should technically cut the yarn; if they simply grip  
 130 or hold it until it is broken by the strain from the cylinder or otherwise, it would answer all the purposes, and it is evident that numerous alterations and changes in and from the



construction herein described may be made without departing from the equivalent of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of two cutters or yarn severing devices for severing yarns passing through the same, and devices for controlling and for actuating said cutters, the controlling devices having provisions by virtue of which each yarn controls the cutter for the other yarn.

2. The combination of two automatic yarn severing devices for severing yarns passing through the same, mechanism for operating, and devices for controlling the same, the controlling device of each severing device engaging with yarn passing through the other.

3. The combination of a movable cylinder, two cutters or yarn severing devices for yarn passing through the same, a throw-out means adapted to be engaged by the knitting cylinder for operating the same, provisions for controlling said means and adapted to be controlled by engagement with one of the yarns, and a connection between the throw-out and cutter of the other yarn.

4. The combination in a knitting machine of yarn guides for feeding two yarns to the needles, a cutting or severing device for each yarn, one operated by mechanism engaging with the moving knitting cylinder or other moving part of the machine, the other cutter by a spring held in operative position by a controlling device engaging with the yarn passing through the first mentioned cutting device.

5. The combination with a knitting machine of two cutting or severing devices for two yarns passing through the same, a spring for automatically operating one of the cutters, a

cutter controller operating to hold in check the spring actuated cutter by engagement with the yarn of the other cutter, mechanism for operating the other cutter by engagement with the moving knitting cylinder or other moving portion of the machine, which cutter operating mechanism is held normally out of engagement with the moving cylinder by a controller engaging the yarn passing through the first mentioned cutter.

6. In a device for automatically discontinuing the feed to a knitting or similar machine using two threads or yarns, a presser, an automatic throw-out for the presser, a controller for holding the throw-out in check by engagement with one of the yarns, a cutter for each of the yarns, a connection between the presser mechanism and one of the cutters for operating the cutter, a spring for operating the other cutter, a cutter holder for holding the spring actuated cutter normally in check in operative position by connections engaging with the other thread or yarn, combined substantially as set forth.

7. The combination of two automatic yarn severing devices for severing yarns passing through the same, each having mechanism for controlling the same and engaging with yarn passing through the other.

8. In a device for feeding two yarns, a yarn cutting or severing device through which one of the yarns passes, and a controlling device for controlling the cutting or severing device and engaging with the other yarn.

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

GEORGE W. SNYDER.

Witnesses:

GEORGE C. CARTER,  
GEO. A. GAYWARDS.