

H. SWINGLEHURST.
LATCH OPENING DEVICE FOR KNITTING MACHINES.
APPLICATION FILED MAY 14, 1907.

922,064.

Patented May 18, 1909.

2 SHEETS—SHEET 1.

Fig. 1

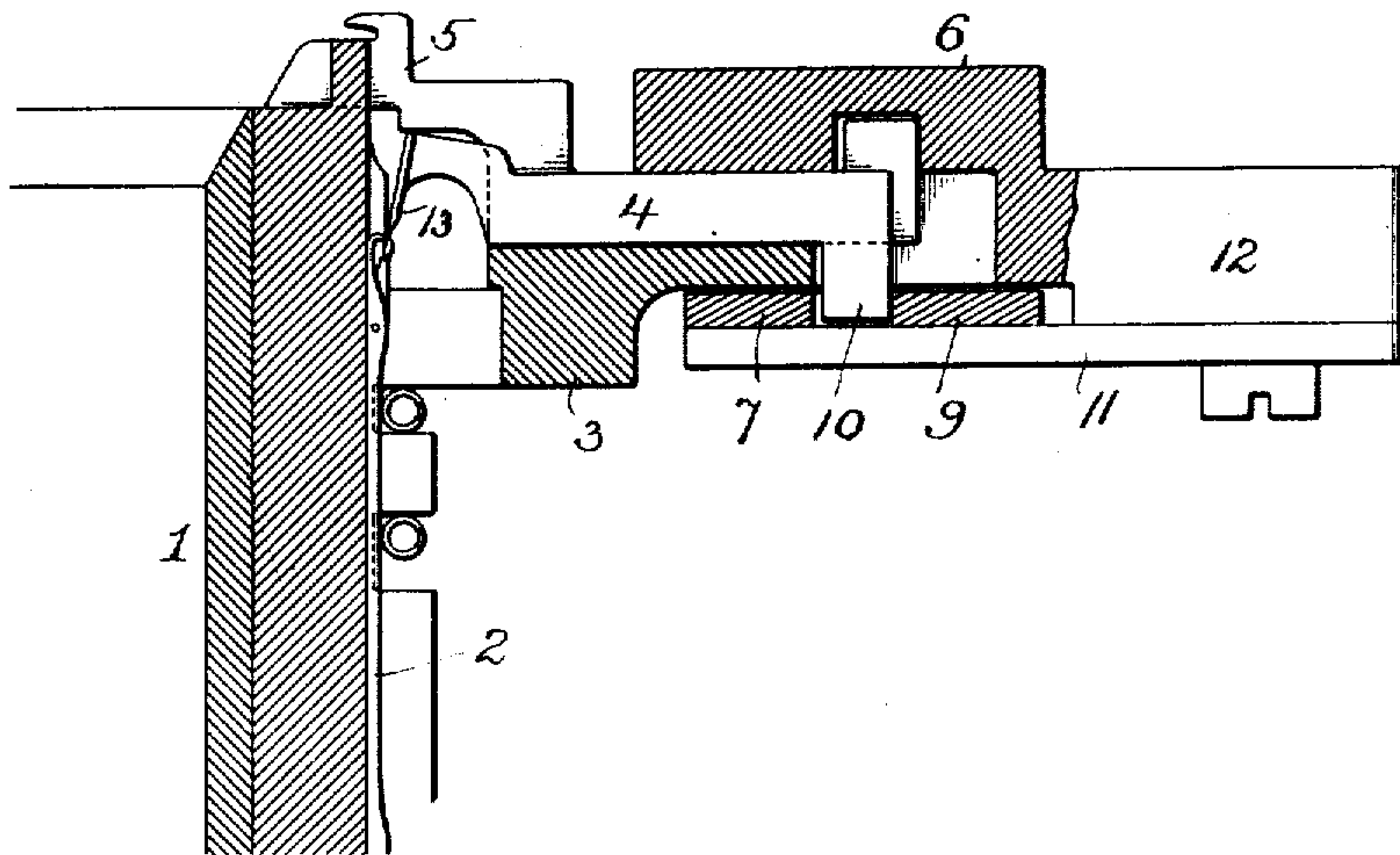


Fig. 2

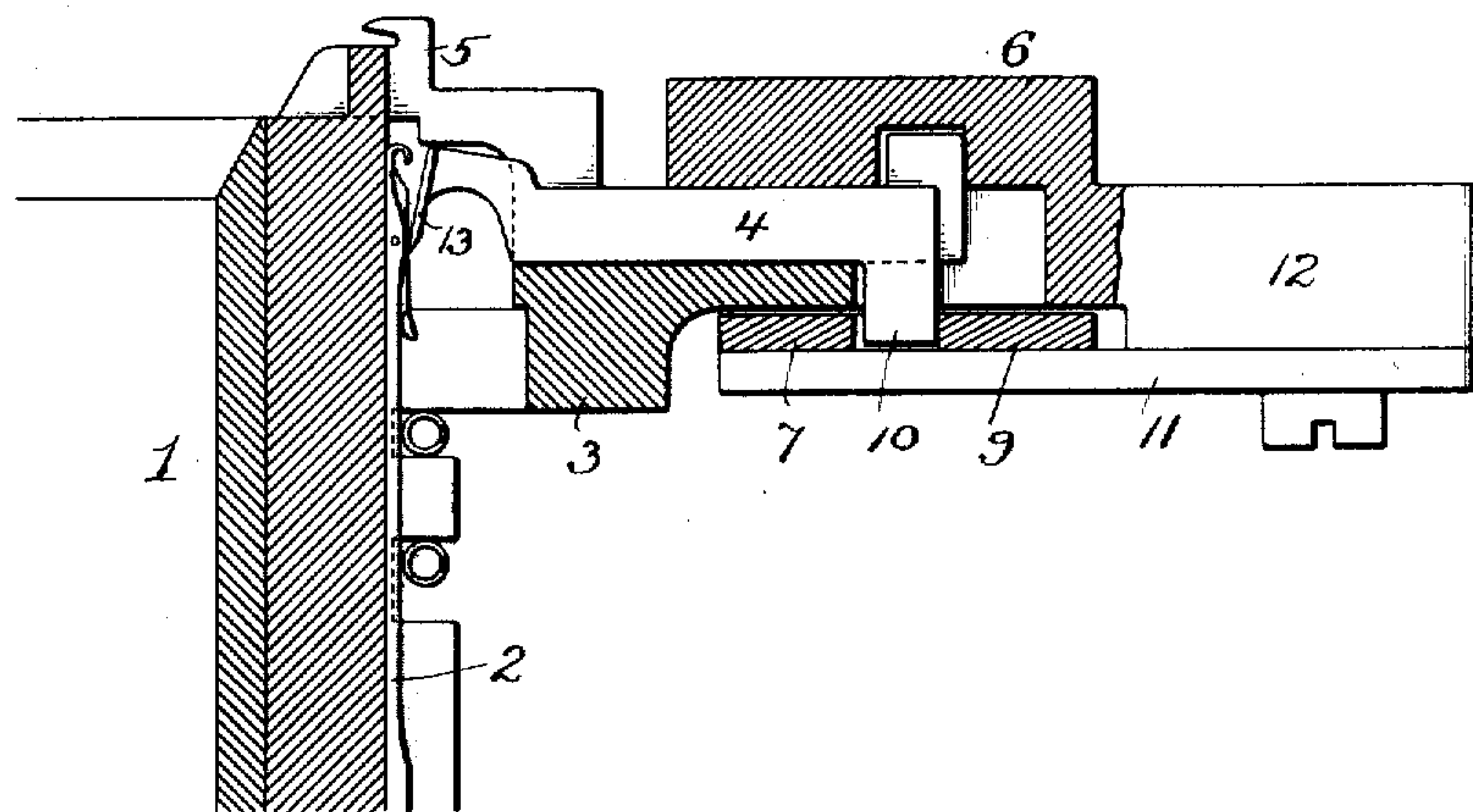
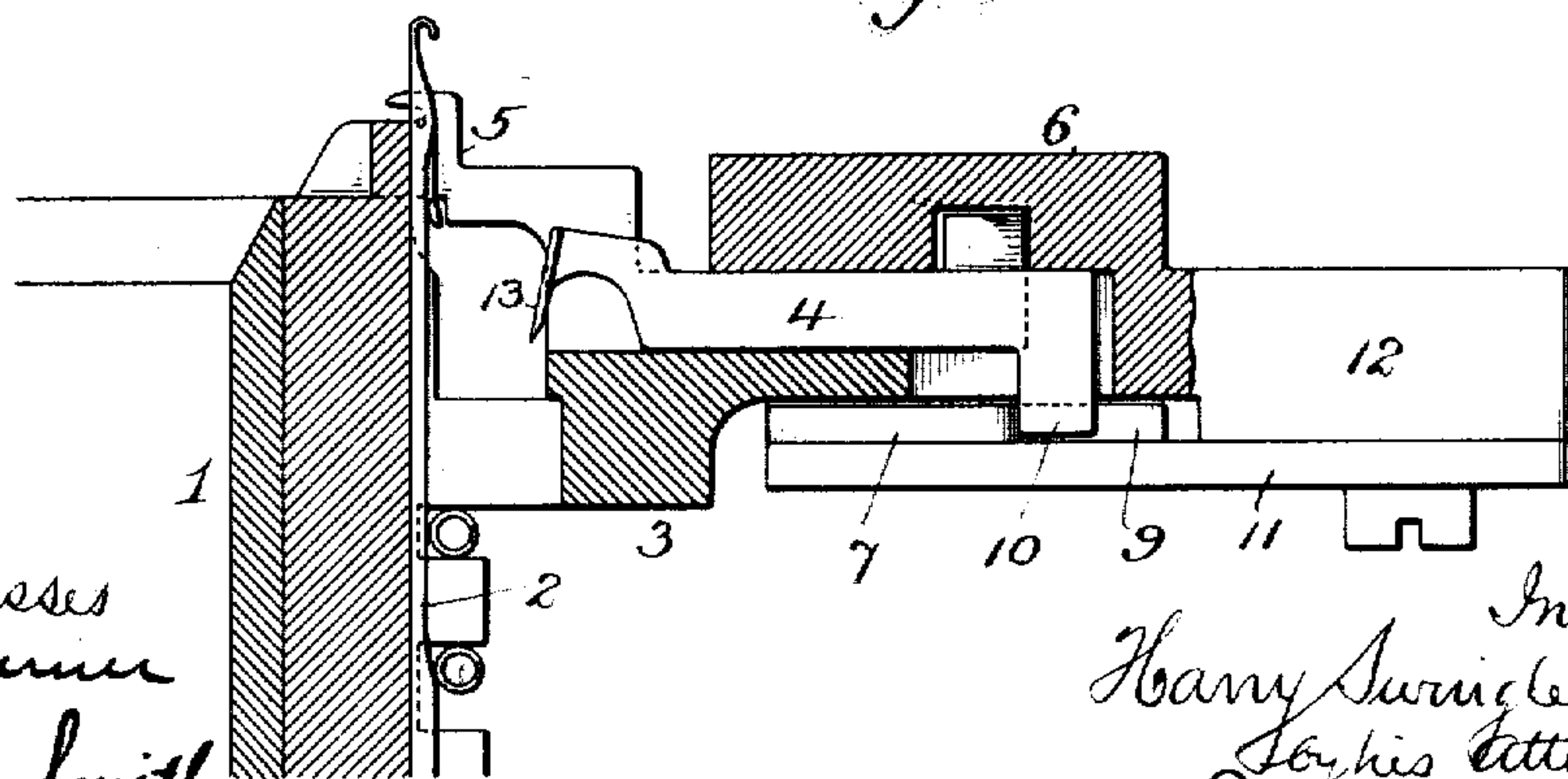


Fig. 3



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Fig. 4.

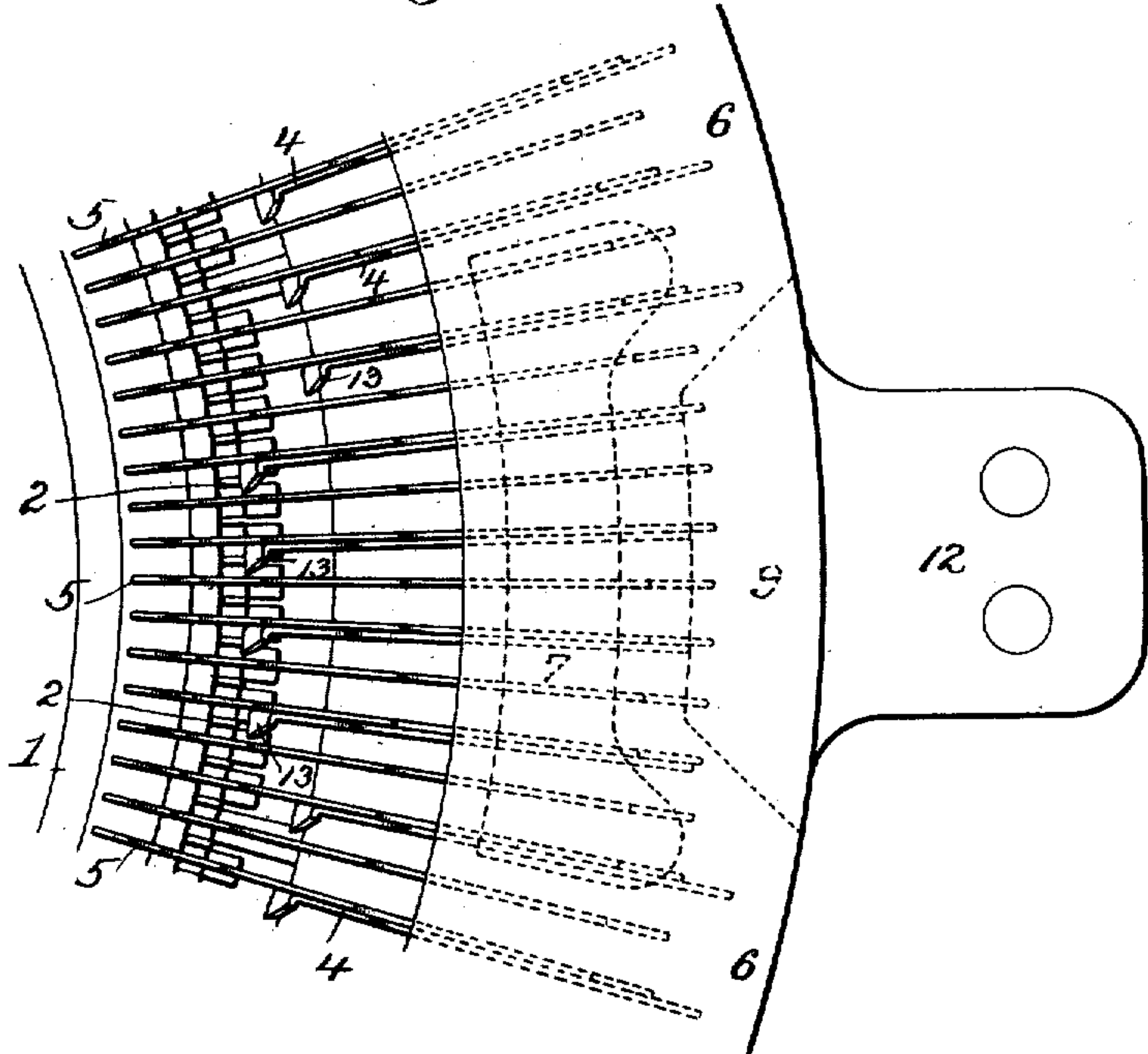
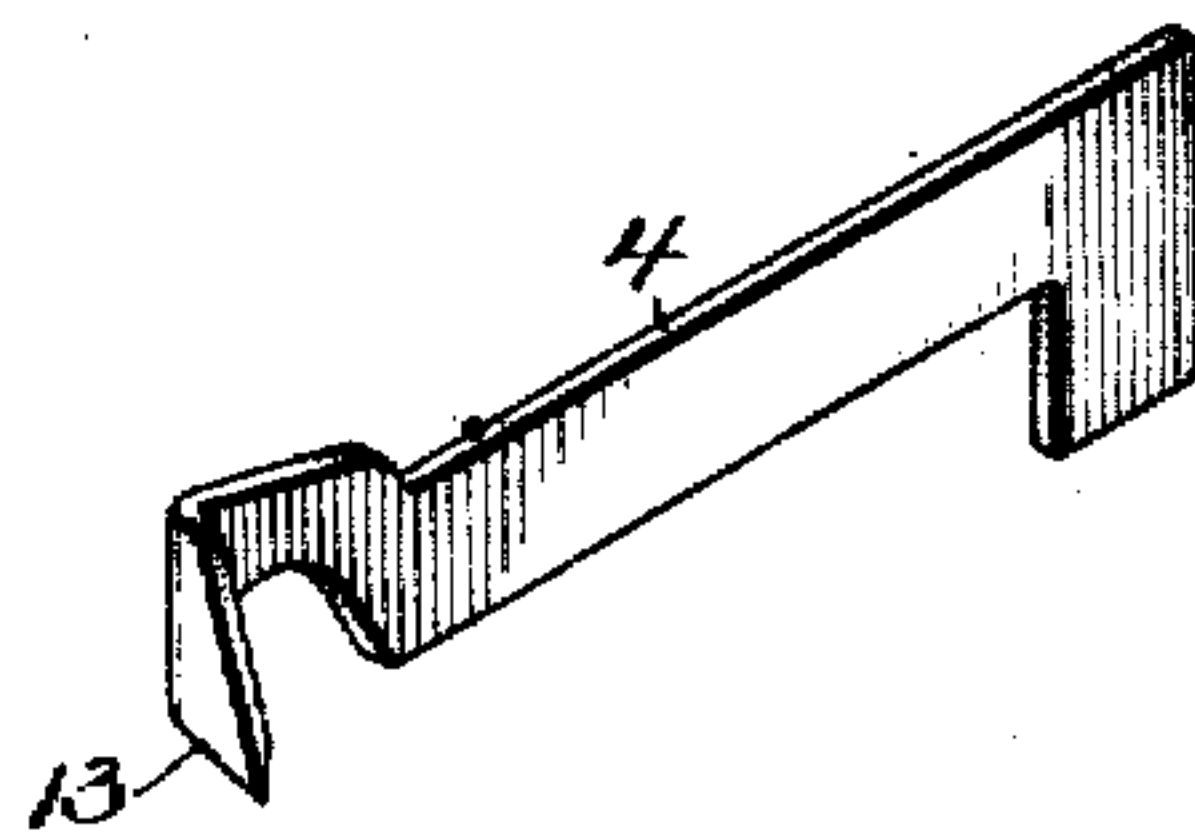


Fig. 5.



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UNITED STATES PATENT OFFICE.

HARRY SWINGLEHURST, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ROBERT W. SCOTT, OF LEEDS POINT, NEW JERSEY, AND LOUIS N. D. WILLIAMS, OF OGONTZ, PENNSYLVANIA.

LATCH-OPENING DEVICE FOR KNITTING-MACHINES.

No. 922,064.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed May 14, 1907. Serial No. 373,619.

To all whom it may concern:

Be it known that I, HARRY SWINGLEHURST, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Latch-Opening Devices for Knitting-Machines, of which the following is a specification.

My invention consists of a latch opener intended especially for use in connection with that class of machines in which certain of the needles are, during a part of the time, out of action and are held in a depressed or retracted position, being moved into operative relation to other needles of the machine for the reception of transferred stitches and thereafter operated to receive the knitting yarn as long as their active participation in the operation of the machine is required.

One object of my invention is to provide a simple and efficient form of latch opener for this purpose, and a further object is to prevent any interference with the ordinary operation of the machine by the latch opener when the latter is not performing its intended function. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of sufficient of a knitting machine to illustrate my present invention; Figs. 2 and 3 are similar views, but illustrating some of the parts in different positions from that illustrated in Fig. 1; Fig. 4 is a plan view of part of the machine, and Fig. 5 is a perspective view of one of the latch-opening bits detached from the machine.

In the drawing, 1 represents part of the needle cylinder of a circular knitting machine, and 2 certain needles guided therein in the usual manner, these needles being reciprocated by suitable cams in the ordinary way during the knitting operation. In machines of a certain type such as that for instance forming the subject of Letters Patent No. 834,763, dated October 30th, 1906, certain of the needles are temporarily put out of action by depressing them until their butts are out of range of the knitting cams and are afterward brought into action again to receive stitches and resume knitting, and it is important that when thus brought into action again their latches should be opened in order

that the needles may present open hooks for the reception of the transferred stitches. In order to effect this result I mount upon the outside of the cylinder, some distance below the top of the same, a ring 3, which is radially grooved for the reception and guidance of the latch opening jacks 4, this ring also, in the present instance, serving for the reception and guidance of the reciprocating web holders 5 with which machines of this type are usually provided, certain of the web holders, in the present instance, being guided in the same grooves as the latch opening bits, although a special groove for each may be provided if desired. The web holders are reciprocated by cams in a ring 6 surrounding the cylinder, and this ring also carries cams 7 and 9 whereby reciprocating movement is imparted to the latch-opening bits 4, the latter having depending lugs 10 for engaging said cams which are carried by an arm 11 secured to the inner side of a bracket 12 on the cam ring 6, although these cams can be mounted in any desired way without departing from the essential features of my invention.

Each of the latch-opening bits 4 has, at its inner end, a laterally bent finger 13, preferably beveled or sharpened at its lower edge as shown in Fig. 5, and when the bit is projected by its cam 9 the finger will occupy a position above the top of a depressed needle 2, whereby, when the latter is lifted in order to bring it into action, the beveled or sharpened lower end of the finger will pass between the hook of the needle and the upper end of the closed latch, as shown in Fig. 1, and as the needle continues to rise will fully open the latch, as shown in Fig. 2, the bit being then withdrawn as shown in Fig. 3, so as not to interfere with the further upward movement of the needle or with the subsequent operation of the same or of any of the other parts of the machine.

In order to prevent the latches from coming into contact with the stems of the latch opening bits 4, during the opening movement, especially if the latches or needles are slightly bent or twisted, the stem of each bit is recessed at and near the finger 13, so as to clear the end of the latch during the swing of the latter.

While I have described my improved latch

opener as used in connection with temporarily inactive and abnormally depressed or retracted needles it is susceptible of general use as a latch opener and may be so used if desired.

I claim:—

1. The combination of a reciprocating needle of a knitting machine with a latch opener movable into and out of position to engage the latch of said needle, said movement being in the same plane as that in which the latch swings.
2. The combination of a reciprocating needle of a knitting machine cylinder with a latch opener reciprocating in a radial plane.
3. The combination of a reciprocating needle of a knitting machine with a latch opener having a transversely bent finger for acting upon the latch of the needle.
4. The combination of a reciprocating needle of a knitting machine with a latch opener movable into and out of position to engage the latch, said latch opener having a finger for acting upon the latch, which finger is bent in a direction transverse to the direction of swing of the latch.
5. The combination of a reciprocating needle of a knitting machine, with a latch opener, reciprocating in the same plane as that in which the latch swings, and having a finger for acting upon said latch, which finger is bent in a direction transverse to the direction of swing of the latch.
6. The combination of reciprocating needles of a knitting machine with an independent latch opening bit for each of the needles to be acted upon.
7. The combination of reciprocating needles of a knitting machine with an independent latch opening bit for each of the needles to be acted upon, and means for moving said

bits into and out of position to engage the latches of the needles.

8. The combination of reciprocating needles of a knitting machine with an independent latch opening bit for each of the needles to be acted upon, and means for reciprocating said bits in a direction transverse to the plane of movement of the needles.

9. The combination of a needle carrier, reciprocating needles therein, web holders, latch opening bits, and a common carrier for said web holders and bits.

10. The combination of a needle carrier, reciprocating needles therein, web holders, latch opening bits, a common carrier for said web holders and bits, and means for reciprocating said web holders and bits in said carrier.

11. The combination of a needle carrier, reciprocating needles therein, reciprocating web holders, reciprocating latch opening bits, and a carrier having grooves serving for the reception and guidance in common of a web holder and latch opening bit.

12. The combination, of a reciprocating needle of a knitting machine, with a latch opener having a stem movable in the same plane as that in which the latch swings and having a latch-engaging portion bent in a direction transverse to the swing of the latch, said stem being recessed at a point adjacent to the bend to clear the end of the swinging latch.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

HARRY SWINGLEHURST.

Witnesses:

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