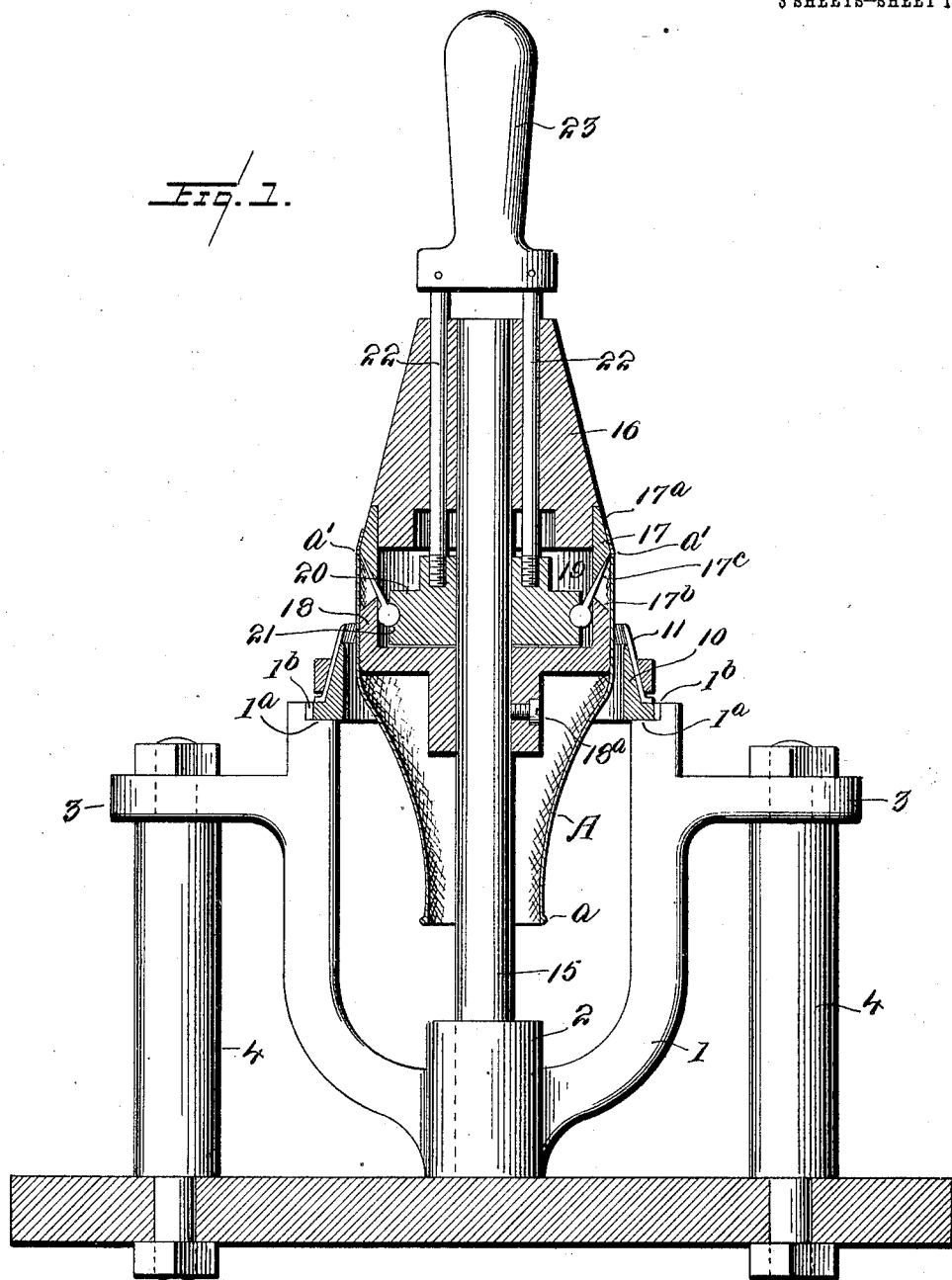


W. E. SMITH.
MACHINE FOR RUNNING ON KNIT GOODS.
APPLICATION FILED MAY 12, 1909.

1,006,305.

Patented Oct. 17, 1911.

3 SHEETS-SHEET 1.



WITNESSES:

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R. E. Barry.

INVENTOR

BY *William E. Smith*
W. E. Smith

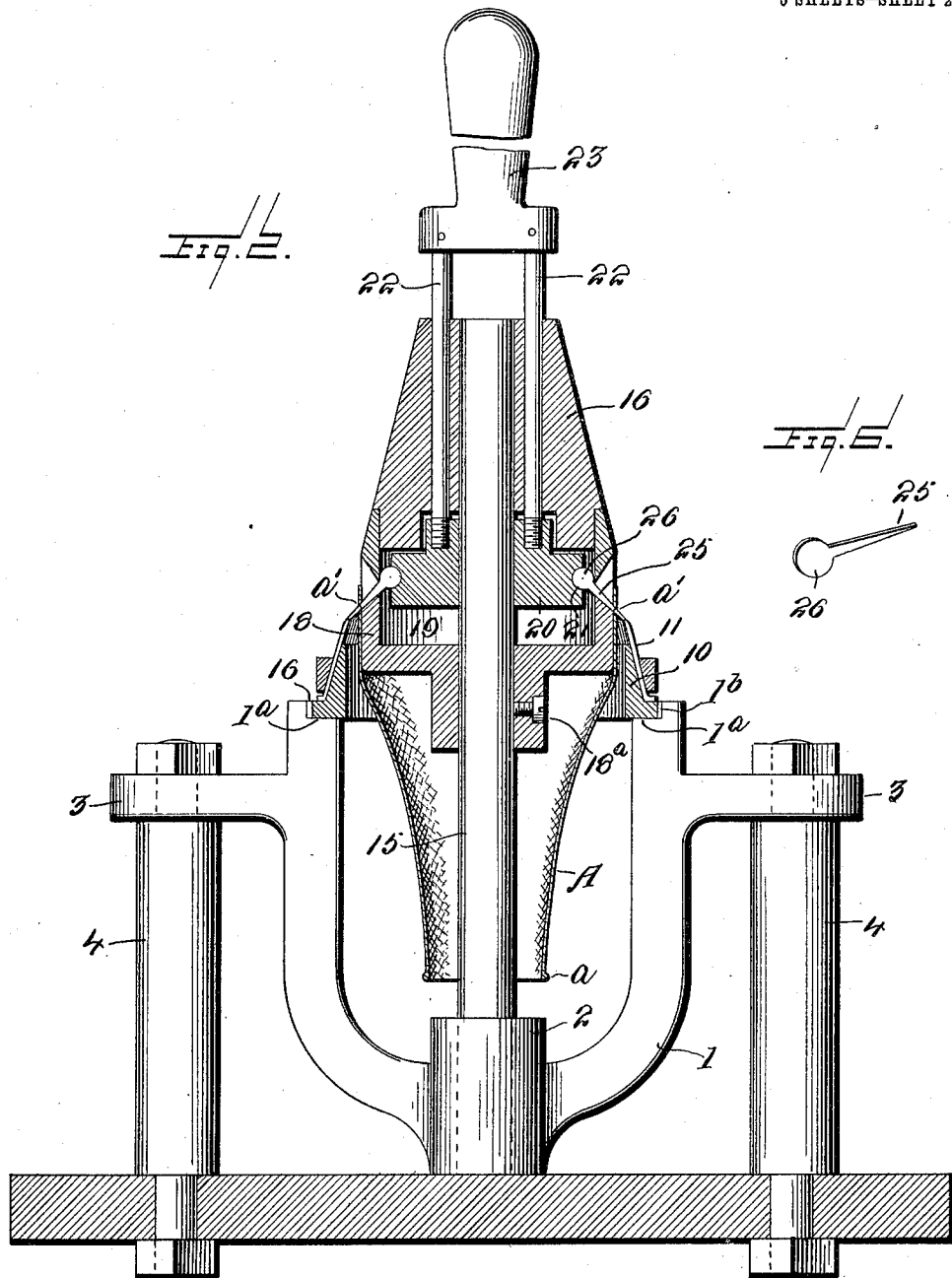
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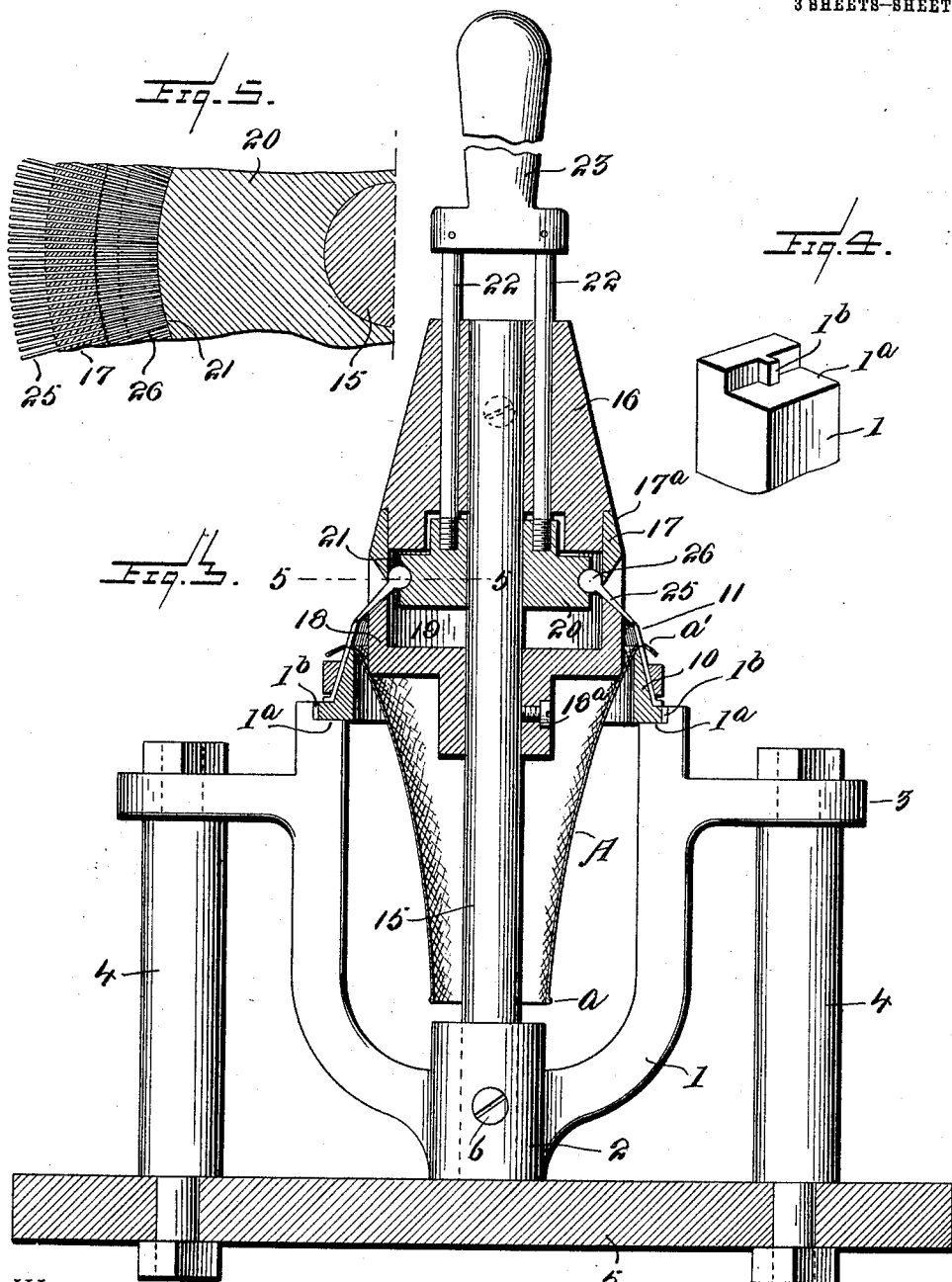
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3 SHEETS-SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM E. SMITH, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR TO KILBOURN MANUFACTURING CORPORATION, OF NEW BRUNSWICK, NEW JERSEY.

MACHINE FOR RUNNING ON KNIT GOODS.

1,006,305.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed May 12, 1909. Serial No. 495,397.

To all whom it may concern:

Be it known that I, WILLIAM E. SMITH, citizen of the United States, residing at New Brunswick, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Machines for Running on Knit Goods; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features hereinafter described reference being had to the accompanying drawings which illustrate one form in which I have contemplated embodying the invention and said invention is fully disclosed in the following description and claims.

The object of my invention is to provide mechanism for facilitating the placing of the stitches of a course of a circular knit fabric upon the needles of a knitting machine in order that a continuation may be knit integrally therewith.

The embodiment of my invention which I have selected to illustrate my invention is an apparatus for running on the stitches of a course of a web top for half hose, upon the points of a transfer ring, from which the stitches can be quickly transferred to the needles of a knitting machine in a well known manner. As is well known the ribbed tops with which half hose are usually provided are ordinarily knit upon a rib machine having dial and cylinder needles, and are provided at one end with a "welt" which forms the selvage or top of the stocking, and are provided near the other end with an entire course of stitches knit more loosely than the ordinary stitches of the fabric to facilitate their application to the needles of the knitting machine. These loose or open stitches constitute what is usually called the "slack course" and the fabric is knit in the ordinary manner for a few courses after the slack course is produced, and which are raveled out after the slack course is applied to the needles of the knitting machine. These tops or ribbed portions are usually knit continuously in a long strip, the welt and slack course recurring at proper intervals, and they are severed into individual tops, before application to the knitting machine.

In the accompanying drawings, Figure 1 represents an elevation partly in section, of an apparatus for running on knitted web, embodying my invention, and showing a ribbed top applied thereto preparatory to transferring it to the transfer ring or cup. Fig. 2 is a similar view showing the parts as they appear after the transfer levers are actuated to cause them to engage the stitches of the slack course and swing into operative relation with the points of the transfer ring. Fig. 3 is a similar view showing the web drawn down and the stitches of the slack course upon the points of the transfer ring. Fig. 4 is a detail perspective view of the top of one of the supports for the transfer ring. Fig. 5 is a partial horizontal sectional view on line 5-5 of Fig. 3. Fig. 6 is a detail perspective view of one of the transfer levers.

In the drawings 1 represents a supporting frame, here shown as U-shaped, provided at the bottom with a vertical sleeve 2, and near the top with lateral arms 3, 3, which are connected by standards 4, 4 to a table 5 or other supporting device. As here shown the standards 4, 4 are provided at their opposite ends with threaded portions of reduced diameter, which pass through apertures in the arms 3 and table 4 and are secured by nuts.

The upper ends of the U-shaped portions of the frame 1, are provided with rabbeted portions 1^a to receive and support a transfer ring 10 of usual construction, provided with the transfer points 11 U-shaped in cross section, with the grooves on the outer side and the said supports and the transfer ring are provided with interlocking means for insuring the exact positioning of the ring upon the supports. As here shown the rabbeted portions of the frame are provided with inwardly extending lugs 1^b which engage notches in the periphery of the transfer ring.

15 represents a vertical standard or support in the form of a round bar, the lower end of which is fitted in the sleeve 2 of the frame 1 and secured therein by a set screw 6 or otherwise. The upper end of the standard 15 carries a web supporting device and mandrel over which the knitted fabric to be transferred is drawn and expanded to a certain extent to open the stitches of the slack course and facilitate the action of the transfer levers in engaging the same. The

lower part of the mandrel is hollow and has its wall provided with radial slots or kerfs into which the transfer levers extend and through which they may be projected into the stitches of the course to be transferred, and said slots increase in height from the inner face to the outer face of the hollow portion of the mandrel. The inner ends of the transfer levers have a pivotal engagement with a vertically movable part and the position of the levers is controlled by the upper and lower edges of said slots or kerfs as hereinafter more fully set forth. The upper portion of this mandrel consists preferably of a block 16 shaped like a truncated cone, to facilitate the drawing on and expanding of the web, and is secured to the standard 15. On the lower end of the block 16 is fitted a metallic ring 17, having its upper part provided with a conical exterior face 17^a forming a continuation of the outer face of block 16, and having a portion below the conical face 17^a provided with a cylindrical outer face. The lower edge of the ring 17 inclines upwardly from the exterior to the interior as shown at 17^b. The lower portion of the ring 17 is provided with a plurality of radial cuts or kerfs 17^c corresponding in number with the number of transfer levers extending entirely through the ring wall and having their upper edges inclining upwardly from the inner face of the ring to the outer face as shown. Below the ring 17 is a cup-shaped device 18 secured to the standard 15 by set screw 18^a or other suitable means, and having its upper edge beveled upwardly from the outside to the inside to conform with and engage the lower edge of ring 17, thus forming a recess 19 within the cup shaped device 18 and ring 17. I have described the parts 17 and 18 as I prefer to make them as a matter of convenience in cutting the radial kerfs and assembling the parts, but it is obvious that the kerfs could be cut in the upper edge of the cup shaped device 18, and the ring 17 would then have the form indicated in the sectioned portion thereof in Figs. 1, 2 and 3, or the kerfs could be formed partly in each of the abutting portions of the parts 17 and 18 if desired.

Within the recess 19 is a vertically movable cylindrical block 20 provided with a plurality of transfer levers 25, which have a pivotal relation with said block and project into the radial kerfs 17^c. The block 20 and the web supporting device have a relative movement with respect to each other, in a direction longitudinally of the axis of the said parts. In this instance I have shown the block 20 constructed to slide vertically on the shaft 15 and provided with an annular groove 21, and the transfer levers, one of which is shown in detail in Fig. 6 consist of thin flat pieces of metal (prefer-

ably steel) and are each provided with a nearly circular bearing portion 26.

When the parts of the apparatus are assembled the circular bearing portions 26 of the transfer levers, are placed side by side vertically in the groove 21 of the block 20, the levers 25 extending outwardly through the radial recesses 17^c and said levers are of such length that when the block 20 is in its lowest position as shown in Fig. 1, the levers 25 which then extend in an upwardly inclined direction, have their outer extremities substantially flush with the outer surface of the ring 17. The construction is such that when the parts are assembled the transfer levers will be held in engagement with the groove 21 by the engagement of the inner face of the cup member 18 and ring 17 with the circular bearing portions 26 of the levers, and as the block 20 is raised or lowered the position of the levers will be controlled by engagement with the adjacent edges of the ring 17 and cup member 18, above and below the radial recesses 17^c, as will be readily understood.

The block 20 may be raised and lowered within the recess 19, by any desired means. In this instance I have shown two rods 22, 22 extending vertically through guiding apertures in the block portion 16 of the mandrel and connected at their lower ends with the block 20 and at their upper ends to a handle 23, over which the web to be transferred may be readily drawn.

The operation of transferring a top or section of fabric by the apparatus herein shown and described is as follows: A ribbed top A is here shown, provided with the welt α and the slack course of stitches which is indicated at α' , although it is not absolutely necessary to provide such a slack course. The transfer levers being in raised position as shown in Fig. 1, the web is drawn downward over the mandrel until the slack course (or the course to be transferred) is in line with the points of the transfer levers. The block 20 is then raised by means of the handle 23 and the ends of the transfer levers will be forced outwardly, and each lever will pass through one of the stitches of the course to be transferred. As the block 20 continues to rise, the transfer levers will be caused to swing outwardly and downwardly, see Fig. 2, carrying the web downward with them until they reach their lowest positions. The throw of the levers is so calculated, that at the extreme end of their downward movement each transfer lever will lie within one of the grooved points of the transfer ring as shown in Fig. 2. The operator then draws the web A downward thereby drawing the stitches of the course to be transferred off of the transfer levers, and onto the points of the transfer ring. The ring is then removed and another is substituted, the block

20 is depressed to restore the transfer levers to their original positions, and the operation can be repeated with the next piece of web. The webs will be transferred from the transfer ring to the knitting machine needles in the usual manner.

What I claim and desire to secure by Letters Patent is:—

1. The combination with means for supporting a transfer ring, of means for supporting a knitted web within said transfer ring, a series of transfer levers, normally out of engagement with the web and means for moving said levers into engagement with the web, and into engagement with the points of the transfer ring.

2. The combination with means for supporting a transfer ring, of a web supporting device within the circle of the points of the transfer ring, a series of pivotally mounted transfer levers, means for projecting said levers through stitches of the web and for causing said transfer levers to swing into engagement with the points of the transfer ring.

3. The combination with means for supporting a transfer ring, of a web supporting device within the circle of points of said ring, a series of transfer levers, means for effecting a relative movement between the transfer levers and the web supporting device to cause the said levers to engage the stitches of the web and then swing into engagement with the points of the transfer ring.

4. The combination with means for supporting a transfer ring, of a web supporting device located within the circle of the points of the transfer ring, a series of transfer levers pivotally mounted and capable of swinging into and out of engagement with the points of the transfer ring, and operating mechanism for said levers.

5. The combination with means for supporting a transfer ring, of a web supporting device located within the circle of the points of the transfer ring, a series of transfer levers, pivotally mounted and capable of swinging into and out of engagement with the points of the transfer ring, and a part movable with respect to the web supporting device for operating said transfer levers.

6. The combination with a support for a transfer ring, of a web supporting device within the circle of the points of the transfer ring, a circular series of pivotally mounted transfer levers movable into and out of engagement with the points of the transfer ring, and a part movable with respect to the web supporting device, engaging the transfer levers adjacent to one end of the same, for operating them.

7. The combination with a hollow web supporting device, of a series of pivotally mounted transfer levers lying within the

periphery of said web supporting device, and means for projecting said levers beyond the periphery of said device and causing them to swing outwardly therefrom.

8. The combination with a hollow web supporting device provided with a series of radial slots, a series of transfer levers lying in said slots and located wholly within the periphery of said web supporting device when in inoperative position and a movable device within said web supporting device engaging said levers for projecting and retracting the same.

9. The combination with a hollow web supporting device provided with a series of radial slots, of an operating device within said web supporting device, a series of transfer levers pivotally engaging said operating device and lying within said radial slots and located wholly within the periphery of said web supporting device when in inoperative position, and means whereby a relative longitudinal movement between said web supporting device and said operating device may be produced, to project and retract said levers.

10. The combination with a hollow web supporting device, provided with a series of radial slots, of an operating device located within the same and provided with an annular groove, a plurality of transfer levers lying in said radial slots and having portions pivotally engaging said annular groove of said operating device said levers being located wholly within the periphery of the web supporting device when in inoperative position and means whereby a relative longitudinal movement between the said web supporting device and the said operating device may be produced to project and retract said levers.

11. The combination with a transfer ring and means for supporting the same, of a hollow web supporting device located within the circle of the points of the said ring and provided with a series of radial slots, a series of transfer levers located in said radial slots, and being located wholly within the periphery of the web supporting device when in inoperative position, and means located within the web supporting device for swinging said levers into engagement with the points of the transfer ring.

12. The combination with a transfer ring and means for supporting the same, of a hollow web supporting device stationarily supported within the transfer ring and provided with a series of radial slots, a series of transfer levers lying in said slots and having their inner ends extending into the interior of said web supporting device, said levers being located wholly within the web supporting device when in inoperative position, an operating device engaging the inner ends of said levers within the web support-

ing device, and movable longitudinally of the web supporting device, and means whereby said operating device may be moved to project the transfer levers and move them
5 into engagement with the points of the transfer ring.

13. The combination with means for supporting a transfer ring, of a web supporting device, a series of transfer levers within
10 the circle of the points of the transfer ring, and means whereby a portion of said parts

may be actuated to cause the transfer levers to pass through the stitches of the web on said web support and engage the points of the transfer ring. 15

In testimony whereof I affix my signature, in the presence of two witnesses.

WILLIAM E. SMITH.

Witnesses:

I. W. KILBOURN,
JOHN ERICKSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."