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J. D. HEMPHILL.
TRANSFERRING DEVICE FOR KNITTING MACHINES.
APPLICATION FILED APR. 17, 1905.

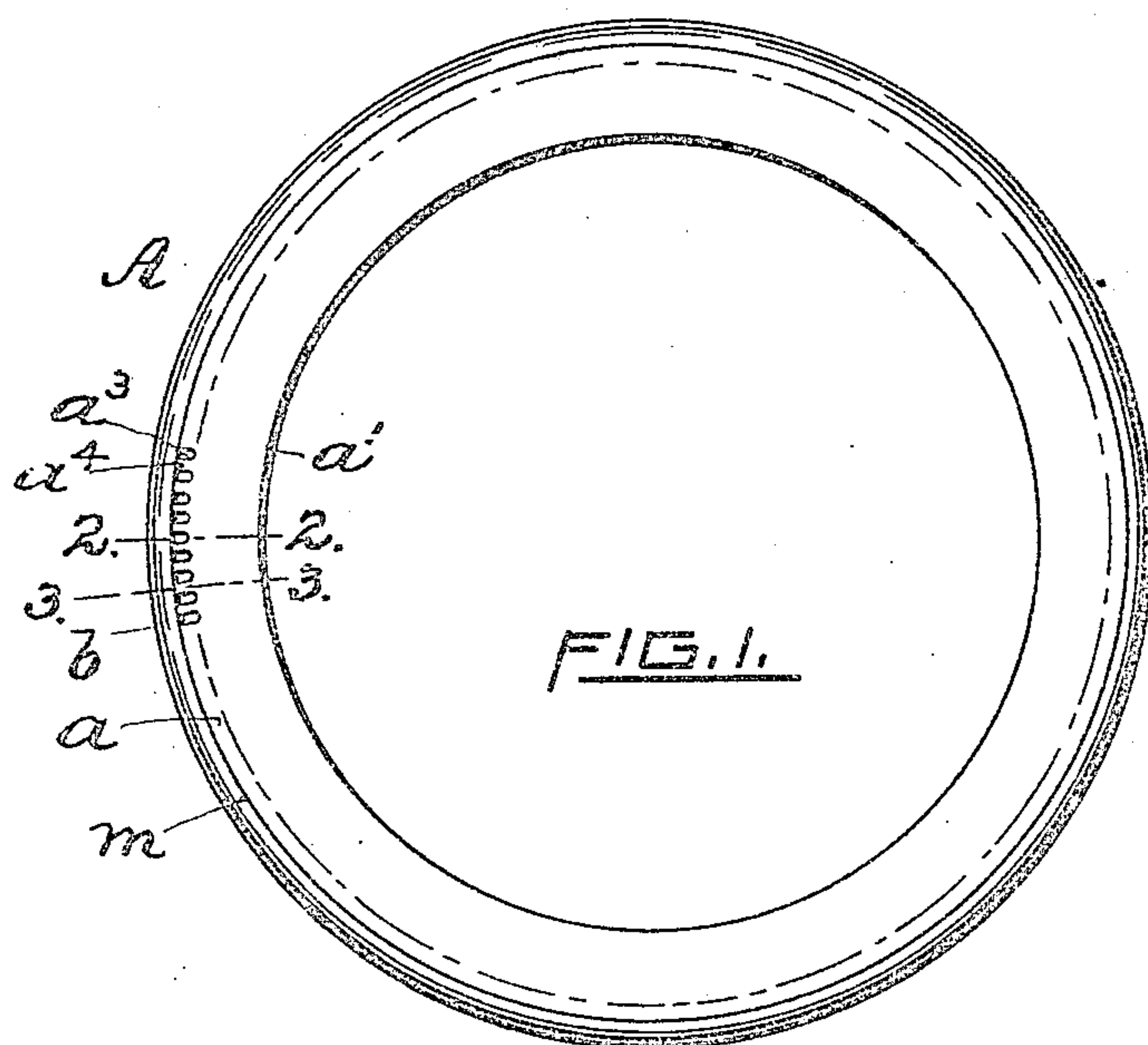


FIG. 4. FIG. 2.

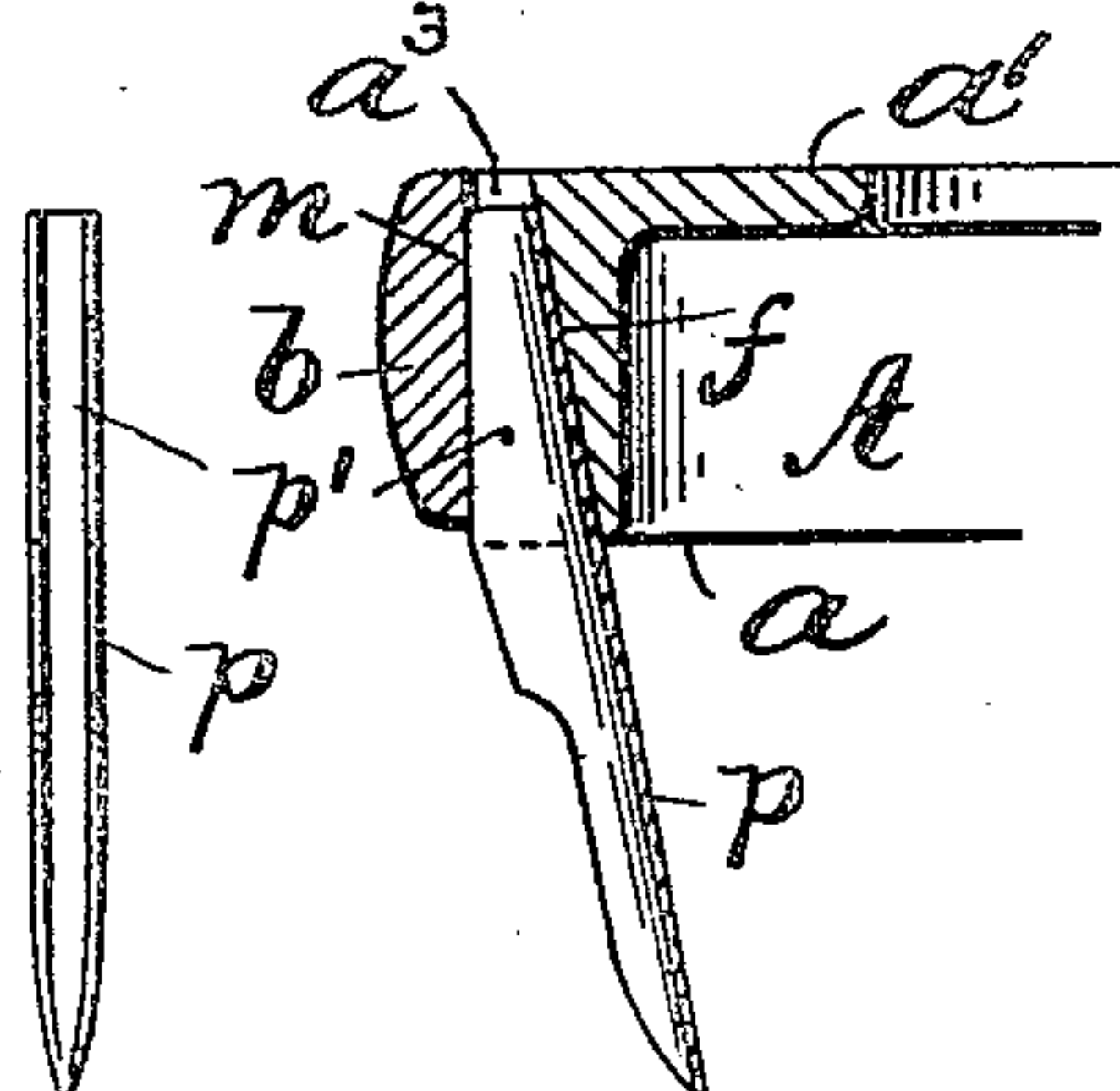


FIG. 3.

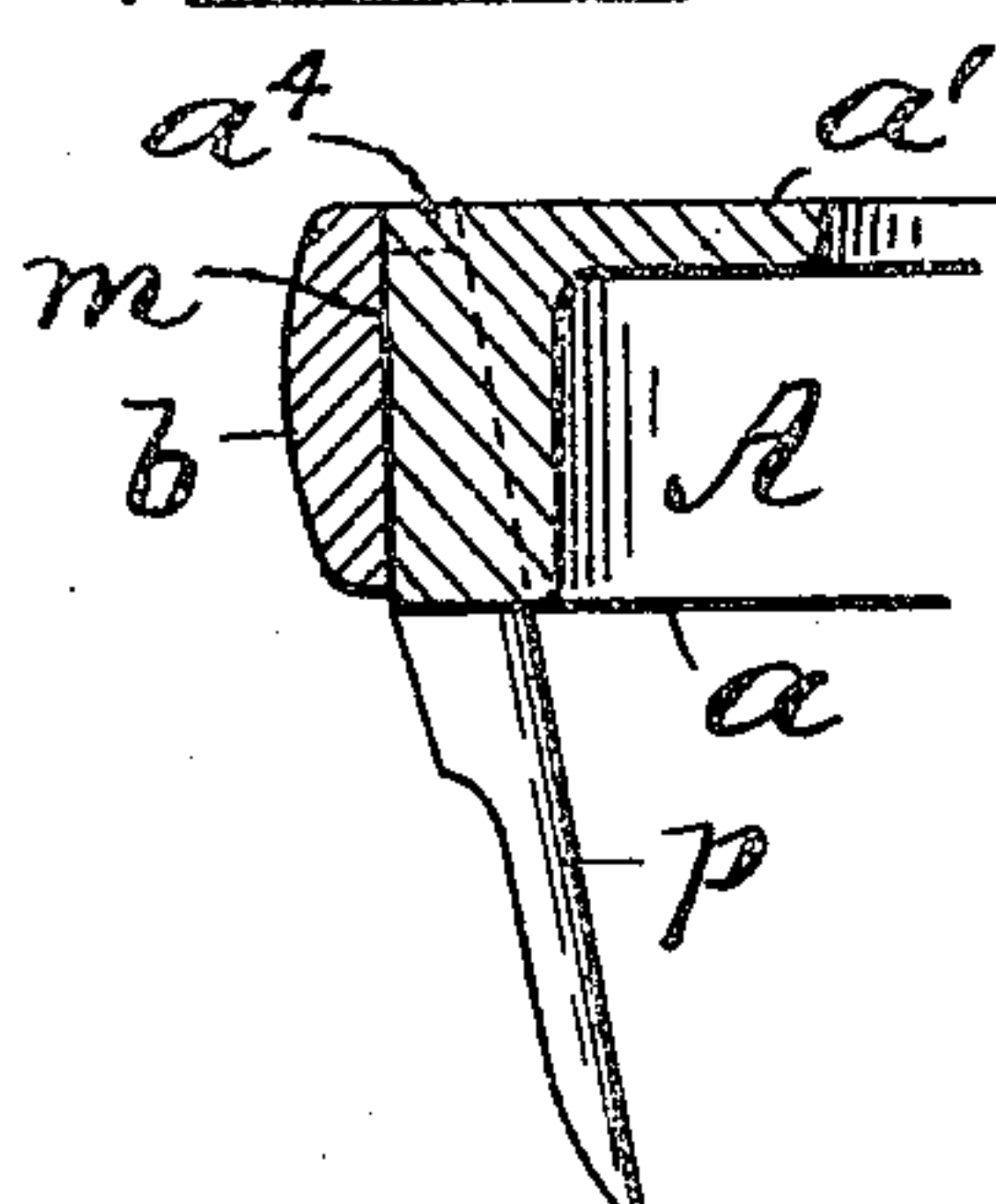
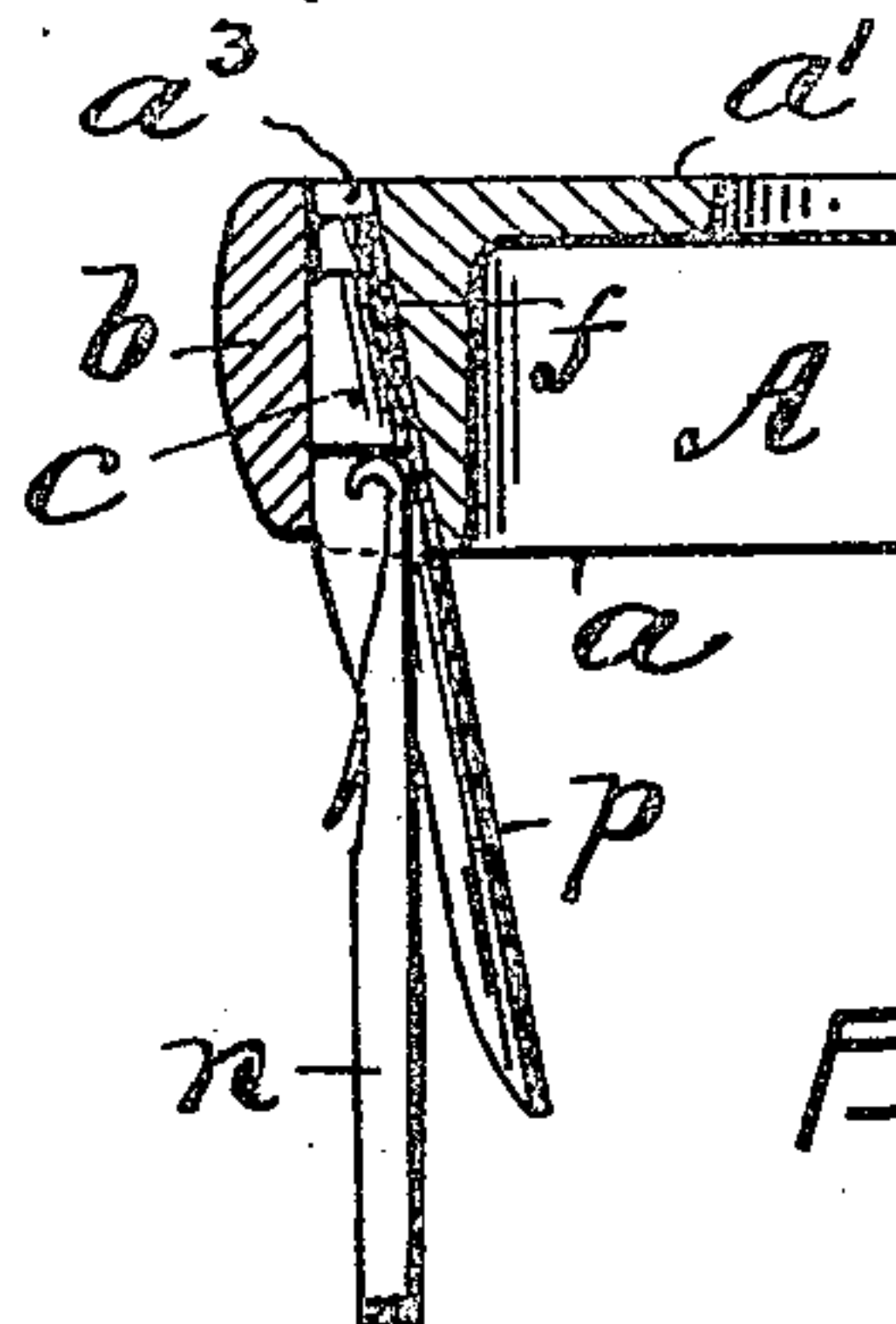


FIG. 5.



WITNESSES.

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TRANSFERRING DEVICE FOR KNITTING-MACHINES.

No. 801,457.

Specification of Letters Patent.

Patented Oct. 10, 1905.

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To all whom it may concern:

Be it known that I, JOSHUA D. HEMPHILL, a citizen of the United States of America, and a resident of Central Falls, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Transferring Devices for Knitting-Machines, of which the following is a specification.

My present invention relates to certain improvements in transferring devices for knitting-machines; and it consists, essentially, of a cylindrically-shaped ring or annular body having formed in its periphery or rim uniformly-spaced inclined or wedge-shaped longitudinally-disposed grooves, an outer ring bored to snugly fit and being rigidly secured to the grooved portion of the first-named ring, and suitably-bent thin sheet-metal-point members or units having wedge-shaped shanks mounted in said grooves.

It further consists in providing the shanks of said point members with removable wedge-shaped blocks adapted when in use to engage the hook end of the needles mounted in the needle-cylinder, and thus form a stop or gage for limiting the needle's upward movement.

In transfer devices of the class referred to and as usually constructed the adjacent or contacting surfaces of the inner and outer ring members are made tapering or beveled, the point-holding grooves being uniform in depth throughout their length and being further provided with means for forcing the outer ring endwise upon the inner ring, so as to clamp the point members in position. As thus constructed the cost of production is materially increased, owing to the greater number of parts employed and also to the extra skill and time required to properly make the taper-fitting joints. A further disadvantage is due to the fact that it is impossible to clamp the points uniformly, because the shanks of the latter are liable to and do vary slightly in width, in which case the outer ring may not engage all the shanks. Therefore the holding effect in the latter event is that due solely to the lateral expansion or resiliency of the shanks against the adjacent side walls or partitions, and consequently the imperfectly-seated points may accidentally drop out when in use, thus causing delay and imperfect work.

In a transferring device embodying my improvements the points may be readily inserted and removed from the ring without separating the members comprising it. In fact, the

ring is practically integral, and owing to the wedge-shaped form of the shanks all the points may be forced endwise in the correspondingly-shaped grooves until firmly seated therein. By means of this construction the cost of the device is considerably lessened, it is stronger, although reduced in weight, it is simple and easily and quickly manipulated and not liable to become accidentally inoperative. I may state that the efficiency of the device is not impaired even when the bottom or working ends of the points are not in alinement, since they may vary one-sixteenth of an inch or so without affecting its utility, as just stated. Such small unevenness of the points may be the result of slight variations in the shanks themselves. In any event, however, the latter are driven endwise until firmly seated in the wedge-shaped grooves or sockets.

In the accompanying sheet of drawings, Figure 1 is a top plan view of a transferring device embodying my improvement. Fig. 2 is a cross-sectional view taken on line 2 2 of Fig. 1, the scale being enlarged. Fig. 3 is a similar view taken on line 3 3. Fig. 4 is a front view of one of the point members detached from the ring. Fig. 5 is a sectional view similar to Fig. 2, showing a needle-stop removably mounted in the shank of the point member; and Fig. 6 is a perspective view of the stop itself.

I may state that in the production of stockings or other classes of knit goods made on tubular-knitting machines it is usual to transfer tubular-knit stocking-ribs to the needles of the cylinders of tubular-knitting machines. An example of such machine is shown and described in United States Patent No. 629,503, granted to me July 25, 1899. In order to unite the previously-knit ribbed top to the stocking to be produced, the former is transferred to the needles of the knitting-machine by what are termed "transfer devices" or "transfer-rings," the general construction and manner of operation of which are well known. The improved ring or transfer device A, illustrated in the drawings herewith and forming the subject of my present invention, is well adapted to be employed for transferring ribbed work to the needles of knitting-machines.

In carrying out my invention I use a short cylinder *a* of suitable material, as brass, having an inner or base flange *a'* at one end. The periphery of the body or cylindrical portion is turned off true and smooth and then pro-

vided with a suitable number of uniformly-spaced longitudinally-extending grooves a^3 , separated by thin partitions a^4 . The bottom f of each groove is inclined to the axis of the ring, the depth of the groove at the upper end being less than at the opposite or lower end, thus forming a beveled or wedge-shaped groove or seat for the correspondingly-shaped shank p' of the point member p . (See Fig. 2.)

I also employ an outer ring b , the same being bored out to snugly fit the said grooved surface of ring a and is shrunk thereon or rigidly secured thereto in any suitable way. m indicates the joint thus formed, the parts a and b then being practically integral. The transfer points or units p are made from thin sheet-metal blanks bent to a U-shape form cross-sectionally, substantially as common. In my improved points the shanks p' thereof are made wedge-shaped to fit the said grooves or sockets a^3 , as clearly shown. The points are readily inserted in the grooves and pressed endwise therein until the shanks p' are seated and bearing snugly against the opposite surfaces or edges m and f , the resiliency of the lateral sides of the shanks at the same time causing them to frictionally engage the surfaces of the adjacent partitions a^4 .

Any point or unit p may be easily and quickly removed from its groove by simply striking a light blow upon a rod or tool inserted in the upper or small open end of the groove.

In order to provide the ring or transfer device A with means for limiting the distance the needles of a knitting-machine may enter therein during the transferring operation, I employ small independent wedge-shaped blocks c , which are inserted endwise in more

or less of the shanks p' of the points p . These blocks c when suitably positioned form stops against which the upper or hook ends of the needles n abut, thereby insuring that the latter do not rise too far, as before stated. (See Fig. 5.)

I claim as my invention and desire to secure by United States Letters Patent—

1. In a transfer device of the character described, the combination of a ring member having a plurality of wedge-shaped grooves or sockets a^3 formed in its rim, and points or units p having wedge-shaped shanks p' seated in said grooves, substantially as described.

2. A transfer device of the character described, comprising a cylindrical-shaped ring a having uniformly-spaced wedge-shaped grooves a^3 formed in its periphery, the bottom f of the grooves being inclined to the ring's axis, an outer ring b rigidly secured to said ring a and closing the outer edge of said grooves, and points p having wedge-shaped shanks p' seated in said grooves, substantially as described.

3. In a transfer device, the combination with a ring having wedge-shaped grooves or sockets a^3 formed in its periphery, of points or units p having wedge-shaped shanks p' seated in said grooves, and wedge-shaped stops or blocks c removably seated in the shanks of said point members, substantially as described and for the purpose set forth.

Signed at Providence, Rhode Island, this 15th day of April, 1905.

JOSHUA D. HEMPHILL.

Witnesses:

GEO. H. REMINGTON,
C. E. INCE.