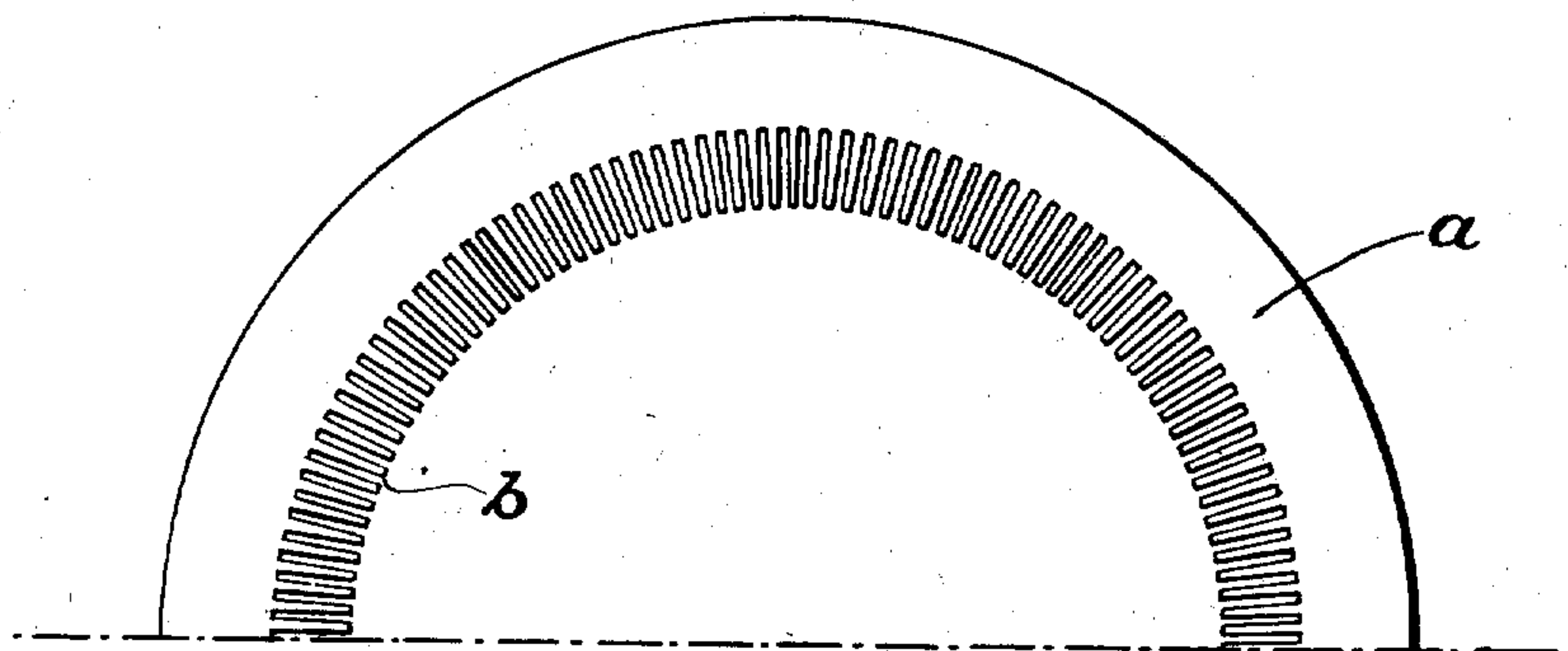


APPLICATION FILED MAY 22, 1907. RENEWED SEPT. 10, 1908.

Patented Nov. 10, 1908.



A technical drawing of a mechanical assembly in cross-section. The central component is a shaft with a pulley. The pulley is supported by a bracket (d) which is mounted on a base (g). The bracket is secured by a bolt (e) and a nut (f). The base is secured by a bolt (h) and a nut (c). The shaft is labeled 'b'. The pulley is labeled 'a'. The bracket is labeled 'd'. The base is labeled 'g'. The bolt/nut assembly is labeled 'e' and 'f'. The support structure is labeled 'c' and 'h'.

FIG. 2.

Polo R. Kitchel.

M. M. Hamilton

Heaney A. Henderson

BY *Handley to Handley*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HARRY A. HOUSEMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO STANDARD MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

NEEDLE-CYLINDER AND OPERATIVE MECHANISM FOR NEEDLES OF CIRCULAR-KNITTING MACHINES.

No. 903,190.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed May 22, 1907, Serial No. 375,024. Renewed September 10, 1908. Serial No. 452,452.

To all whom it may concern:

Be it known that I, HARRY A. HOUSEMAN, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Needle-Cylinders and Operative Mechanism for Needles of Circular-Knitting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

In circular knitting machines, heretofore, as, for instance, in Letters Patent No. 484,787, issued to me October 18th, 1892, levers have been combined with needles, in slots formed in the outer periphery of the needle cylinder. Certain disadvantages arise from this combination.

My invention has for its object, certain combinations whereby these disadvantages may be avoided and positive advantages obtained.

The invention consists in combining, with a needle cylinder having slots therein, preferably tapered, extending from the inner periphery outwards, in which slots are the needles, pivoted levers provided with jaws adapted to hold the shanks of the needles and, in such construction, with a knitting cam cylinder within said needle cylinder.

I will now describe the embodiment of my invention illustrated in the accompanying drawings.

In the drawings: Figure 1 is a partial plan view of my improved needle cylinder. Fig. 2 is a vertical section through the knitting head showing the needles in and out of action.

a is the needle cylinder.

b b, etc., are tapered radial slots in the needle cylinder, extending from the inner periphery outwards.

c c are the needles.

d d are pivoted levers, the jaws *e* of which hold the shanks of the needles.

f is the cam cylinder.

My invention has many advantages over the combination of levers with needles in slots in the outer periphery of the needle cylinder. Among such advantages may be stated: In the prior combination when the needle is moved out of action it moves in at

the bottom and where the needle rests against the needle cylinder, acting as a fulcrum, the hook of the needle moves outward, *i. e.*, toward the yarn carrier and has a tendency to strike it. This is detrimental to good knitting, as it tends to throw the yarn away or out of alinement with the active needle next to this inactive needle. This necessitates a fine adjustment of the yarn carrier. In the present combination the needle moves in the opposite direction, the point where it rests on the needle cylinder acting as a fulcrum, the hook of the needle, if anything, is thrown away from the yarn carrier and carries the yarn which is held around the inactive needle into the hook of the active needle next to it. In the prior combination the needle moves toward the yarn carrier and thus carries the stitches which are already made toward the sinkers. When the needle is out of action the sinkers place a strain upon the stitch, and it requires a close adjustment to prevent cutting thereby. In the present combination the needles moving in the opposite direction carry the stitch away from the sinkers so that no strain is placed on the same. Further, in the prior combination, the shoulder of the lever travels away from the needle and is made of peculiar shape to maintain operative connection. This requires a very fine adjustment. In the present combination this is not required, as the shoulder of the lever and the end of the needle work towards each other and come together without friction. Finally, the motion of the needle lever is, in the present combination, less than in the prior combination, and therefore a fine adjustment of needle lever cams is done away with.

Having now fully described my invention, what I claim and desire to protect by Letters Patent is:

1. In a circular knitting machine, in combination, a needle cylinder having slots therein extending from the inner periphery outwards, needles in said slots and pivoted levers provided with jaws adapted to hold the shanks of said needles.

2. In a circular knitting machine, in combination, a needle cylinder having slots therein extending from the inner periphery outwards, needles in said slots, pivoted le-

vers provided with jaws adapted to hold the shanks of said needles and a knitting cam cylinder within said needle cylinder.

3. In a circular knitting machine, in combination, a needle cylinder, having tapered slots therein, extending from the inner periphery outward, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles.

4. In a circular knitting machine, in combination, a needle cylinder, having tapered slots therein, extending from the inner pe-

riphery outward, needles in said slots, pivoted levers provided with jaws adapted to hold the shanks of said needles and a knitting cam cylinder within said needle cylinder.

In testimony of which invention, I have hereunto set my hand, at Philadelphia, on this 20th day of May, 1907.

HARRY A. HOUSEMAN.

Witnesses:

M. M. HAMILTON,
A. M. URIAN.