(No Model.)

H. A. HOUSEMAN.

CIRCULAR KNITTING MACHINE.

No. 522,210. Patented July 3, 1894.

Fig. 1.

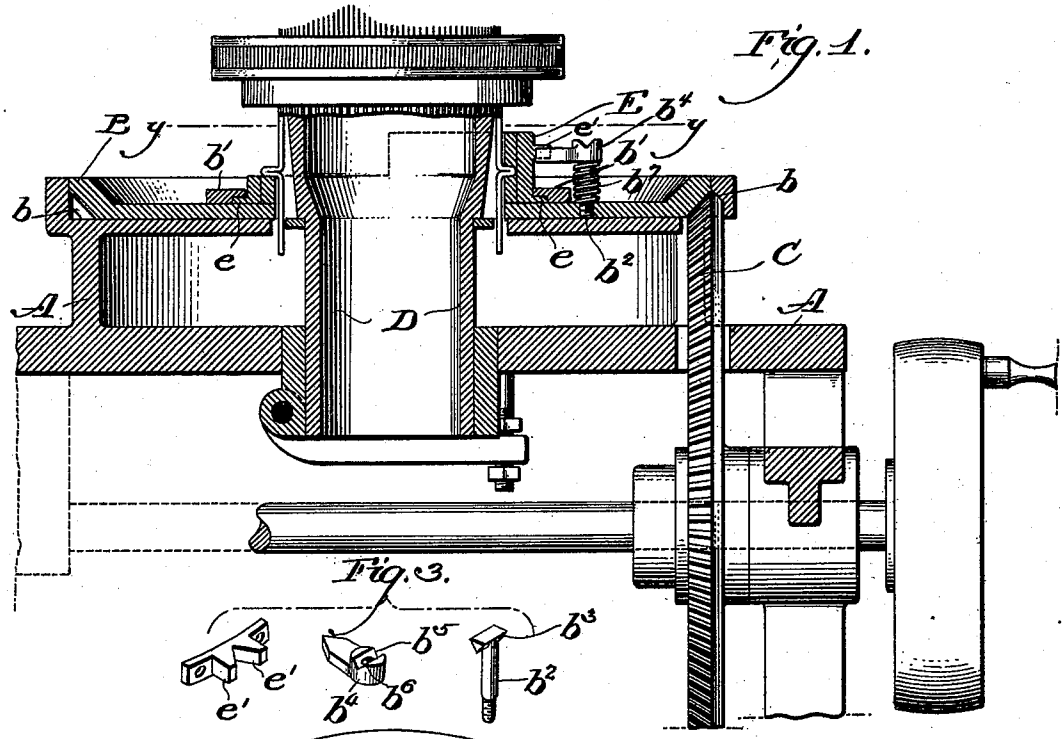
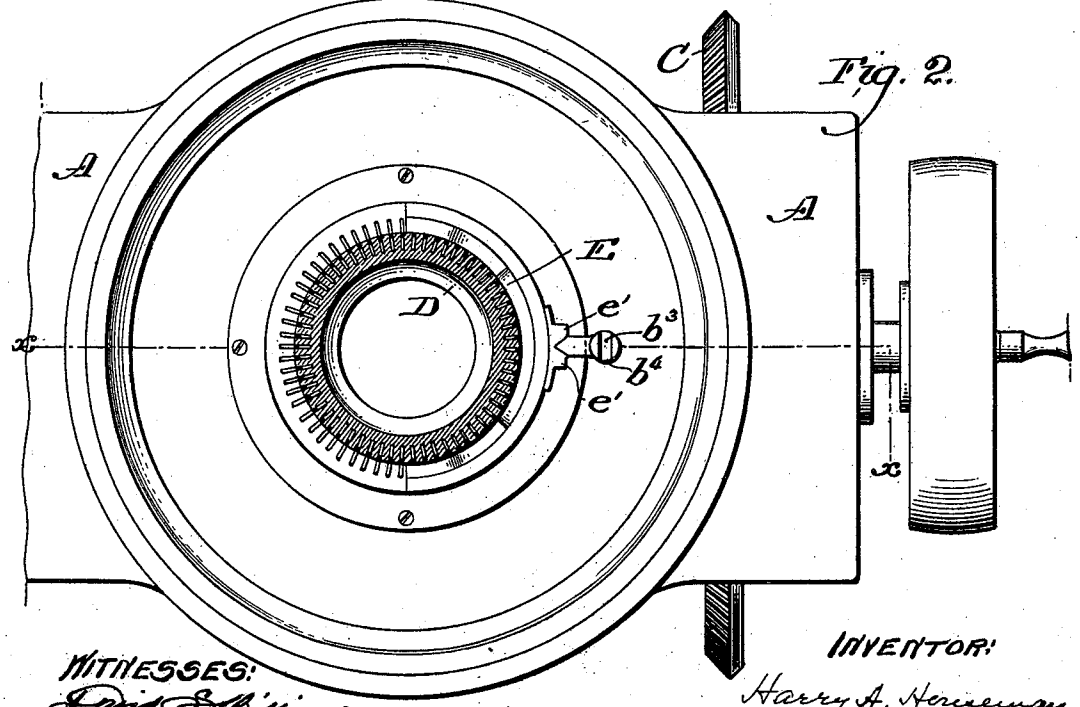


Fig. 3.

Fig. 2.



WITNESSES:
David S. Williamson
Frank L. Busser

INVENTOR:
Harry A. Houseman
by his atty
J. P. Harding

UNITED STATES PATENT OFFICE.

HARRY A. HOUSEMAN, OF PHILADELPHIA, PENNSYLVANIA.

CIRCULAR-KNITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 522,210, dated July 3, 1894.

Application filed December 1, 1893. Serial No. 492,423. (No model.)

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 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.

My invention has for its object certain improvements in the construction of the cam cylinder and in its connection with the rack plate which operates it, and its purpose is to prevent the rotation of the cam cylinder when the knitting cams strike an obstruction, as, for instance, sometimes occurs in those constructions in which the cam cylinder and the rack plate which operates it are rigidly connected together, that in the operation of the cam cylinder the needle receives a portion of the yarn which it is difficult for it to operate upon, causing a strain upon the cams. And the further action of the cam cylinder often causes the needle either to break at the top, in which case a strain is put upon the guides, or the needles often breaking them or putting them out of shape, and sometimes the shank of a needle breaks remaining fixed in the cams, and if it should lie in such a direction as in the travel of the cam cylinder to strike either the needles or the guides in the needle cylinder, it works to break said guides or the needles.

The object of my invention is to defeat these defects, and it consists essentially in forming the cam cylinder and the rack plate which operates it so that they are not fixedly connected to each other or are connected by a flexible connection which, if the cams in their operation should strike an obstruction, will yield and sever the connection between the cam cylinder and its rack plate enabling a correction of whatever trouble has caused the excess of strain to be placed upon the cam cylinder, and avoiding the troubles heretofore described.

I will describe an embodiment of my invention, as illustrated in the drawings, although I do not intend to limit myself to the specific construction therein shown.

In the drawings:—Figure 1 is a sectional elevation of a portion of the knitting machine on the line x—x of Fig. 2. Fig. 2 is a sectional plan on the lines y—y of Fig. 1. Fig. 3 is a detached perspective view of certain portions of the cam cylinder and its connection with the rack plate.

A is the bed of the machine; B the rack plate having the bevel gear, b, which meshes with the bevel gear C driven from the source of power, as is well known.

D is the needle cylinder, and E the cam cylinder, which in my construction, instead of being rigidly connected to the rack plate which operates it, is connected in the following manner: The case of the cam cylinder is provided with a flanged ring e, which rests in a circular projecting offset, b', on the rack plate, which holds the cam cylinder from any vertical movement. The cam cylinder is provided with the projections, e', forming between them a jaw.

b^2 is a post or stud secured to and revolved with the rack plate, B. This stud has on its top the head, b^3.

b^4 is a trippet or finger, the end of which is beveled so as to fit in between the jaws, e', on the cam cylinder and having a head with a seat b^5. As shown in Fig. 1, the stud b^2 slips through the orifice, b^6, in the trippet or finger b^4, the head b^3 of the stud resting upon the seat, b^5.

Between the base of the head of the finger, b^4, and the cam plate, is the spiral spring, b^7. This spring is of sufficient strength to hold the finger, b^4, up against the head, b^3, of the stud, b^2, and in engagement with the jaw formed between the projections, e' e', so as to revolve the cam cylinder with the rack plate, but if the cam cylinder should strike any obstruction throwing a greater strain upon the finger, b^4, than the spring, b^7, is able to counteract, the spring would no longer hold the stud and finger in engagement, and the finger would revolve upon the stud, the character of the joint between the head of the post and finger being such as to cause the finger to move downward upon the stud in its revolution, compressing the spring until the finger slips away from engagement with the jaw on the cam cylinder. While the spring is designed to be sufficiently strong to hold the finger against the head, b^3, in the normal

operation of the cam cylinder, it is not designed to be sufficiently strong to overcome any unusual resistance to the cam cylinder's revolution.

By using a spring capable of resisting the desired strain the cam cylinder will be operated by the rack plate under ordinary conditions, and if it should strike any obstruction the connection between the rack plate and the cam cylinder would be severed so that the cam cylinder will cease to rotate until the defect is remedied.

I do not intend to limit myself to any specific form of yielding connection between the rack plate and the cam cylinder, but the same may be varied without departing from my invention, my invention consisting in so connecting the rack plate and the cam cylinder that in the regular operation of the machine the two will revolve together, but if an abnormal strain be put upon the cam cylinder the connection will no longer hold the two together, and the rack plate will revolve independently.

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

In a circular knitting machine, the combination with the cam cylinder and rack plate, of means for revolving the latter and a device for normally holding the cam cylinder and rack plate in rotatable connection but adapted to admit the severance of the parts when the cam cylinder meets with unusual resistance.

In testimony of which invention I have hereunto set my hand.

HARRY A. HOUSEMAN.

Witnesses:
FRANK S. BUSSER,
JOHN S. CARR.