

UNITED STATES PATENT OFFICE.

ADOLF ANGST, OF ZURICH, SWITZERLAND.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **149,968**, dated April 21, 1874; application filed February 16, 1874.

To all whom it may concern:

Be it known that I, ADOLF ANGST, of Zurich, in Switzerland, have invented a new and useful Improvement in Knitting-Machines, of which the following is a specification:

The nature of my invention consists in the arrangement of the thread-carrier, in combination with a slotted slide attached to the frame which connects the movable carriages. The slotted slide is moved by coming in contact with fixed supports attached at each end of the machine, and thus operates the thread-carrier so as to bring the thread alternately to the one or to the other side of the needle-bed.

In the accompanying drawing, Figure I is a top view of my improved knitting-machine, embodying my invention. Fig. II is a cross-section of the same.

S is the frame of the machine, in which the needle-beds A A are fastened, inclined toward each other. Near the top and bottom of the frame suitable grooved rails or ways R R' are attached, between which the carriages or movable slides are made to work. These slides G G' are provided with the usual lock or upper-wing cams J, which, taking hold of the lugs *m* at the bottom of the needles N, draw the same down, and also with the V-shaped elevating-cam J', which takes hold of the lugs *m* from beneath, to raise or move the needles upward. These carriages or movable slides G G' are connected together through the strap or frame C, and receive their necessary reciprocating motion through a rod attached to the projecting pin M, fast to one of the carriages G. The needle-bed A consists of a number of thin plates placed side by side, every other plate being a little the deeper, to form side walls between the needles. These thin plates are connected together by bolts *a*, or by any other suitable means, and fitted into the frame S, where they are secured through the rails or ways R R'.

By this arrangement the construction of the needle-bed is considerably reduced in expense, as the separate plates forming the bed are readily stamped or pressed any desired shape.

The plates forming the division-wall between the needles are formed with a suitable lug on their upper ends, through which a bolt, *n*, is passed, carrying a peculiar-shaped cam, B, directly above the upper ends or spring-hook of the needles N. To the frame C cams D D,

acted upon by a spring, V, are attached, operating the cams B, as will be hereafter described. In the center of the frame C a small tube, E, turning in suitable bearings *x*, is arranged, passing through the top of said frame C into a groove, *d*, in the slide F, working freely between suitable ways on the top of the frame C. This slide F is so arranged that, by the reciprocating motion of the carriages G G' at the end of each stroke, the end of said slide will come in contact with the projection H or H', attached at each end of the frame S, (see Fig. I,) operating thereby said slide, so that, by means of its curved slot *d*, the end of the pipe E (and, consequently, the thread which is passed through said pipe E) is moved alternately to the one or the other side of the needle-beds. P is the thread take-up, supported by the arm T, fast to the frame C.

The yarn to be knitted is passed through the guides *w w* to the end of the thread take-up P, and then through the tube or pipe (thread-leader) E. The needles raised by the movement of the lock catch the thread from the end of this thread-leading pipe E, and pull the same down, in the shape of a loop in their downward movement. At the next upward movement this loop is pushed backward on the needle, and the latter catches again the thread and moves down again with it in its spring-hook at the end. The cam B, situated directly above the needle, is, during this downward movement of the needle, acted upon by the cam D, attached to the frame C, and forced against the spring-hook, so as to press the tongue of the same into a recess, to allow the thread-loop lying on the needle to pass above and over the tongue and the end of the needle, upon the newly-taken thread, forming thus a mesh.

I claim—

The thread-leading pipe E, in combination with the frame C, the slotted slide F, and the projections or supports H and H', at the ends of the frame S, substantially in the manner and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of December, A. D. 1873.

ADOLF ANGST.

Witnesses:

JOHN F. ALLEN,
F. WALTER.

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