No. 678,927. Patented July 23, 1901.

E. B. ALLEN.

SEWING MACHINE NEEDLE BAR MECHANISM.

(Application filed Jan. 10, 1901.)

(No Model.)

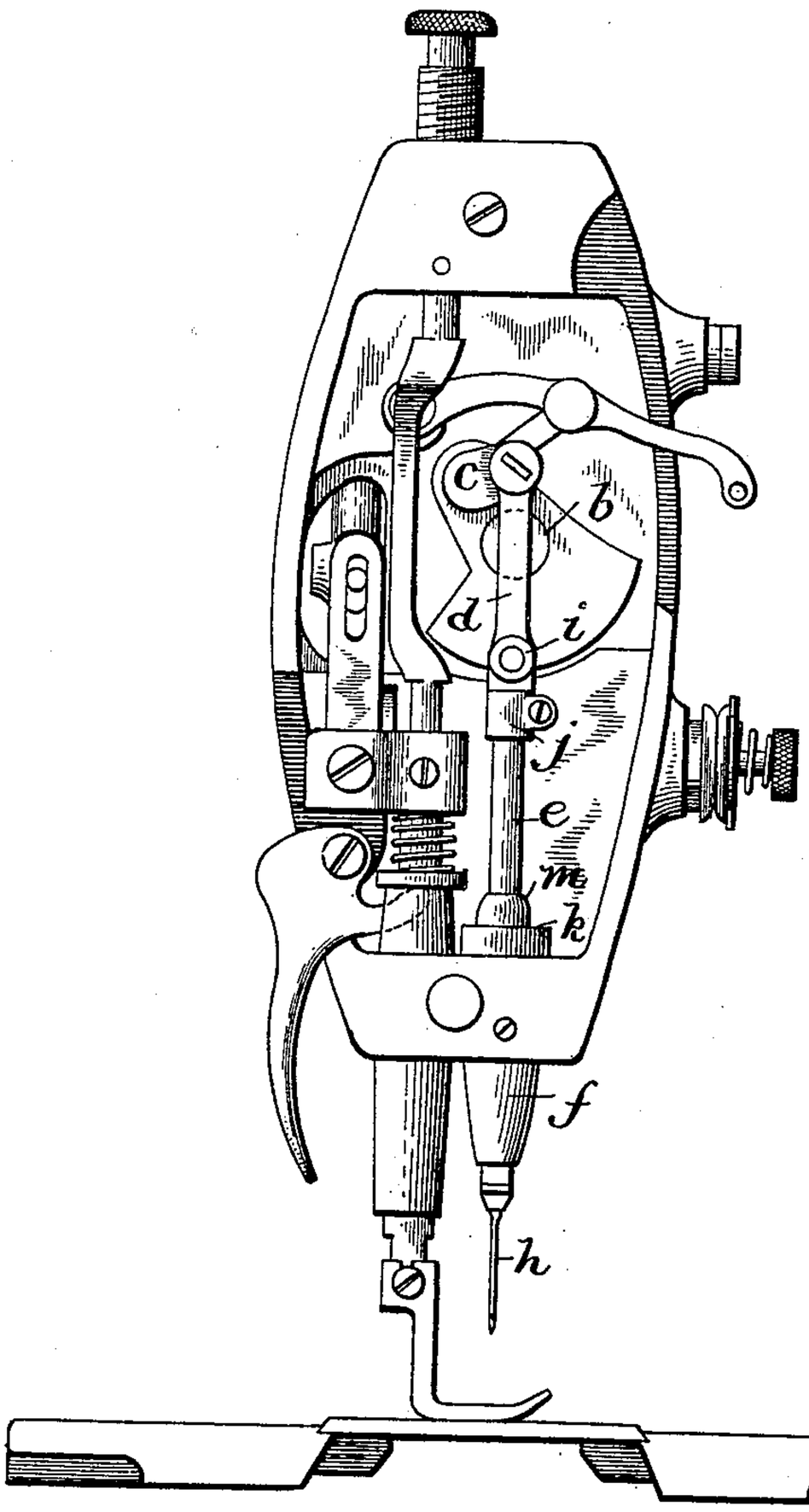

Fig. 1.

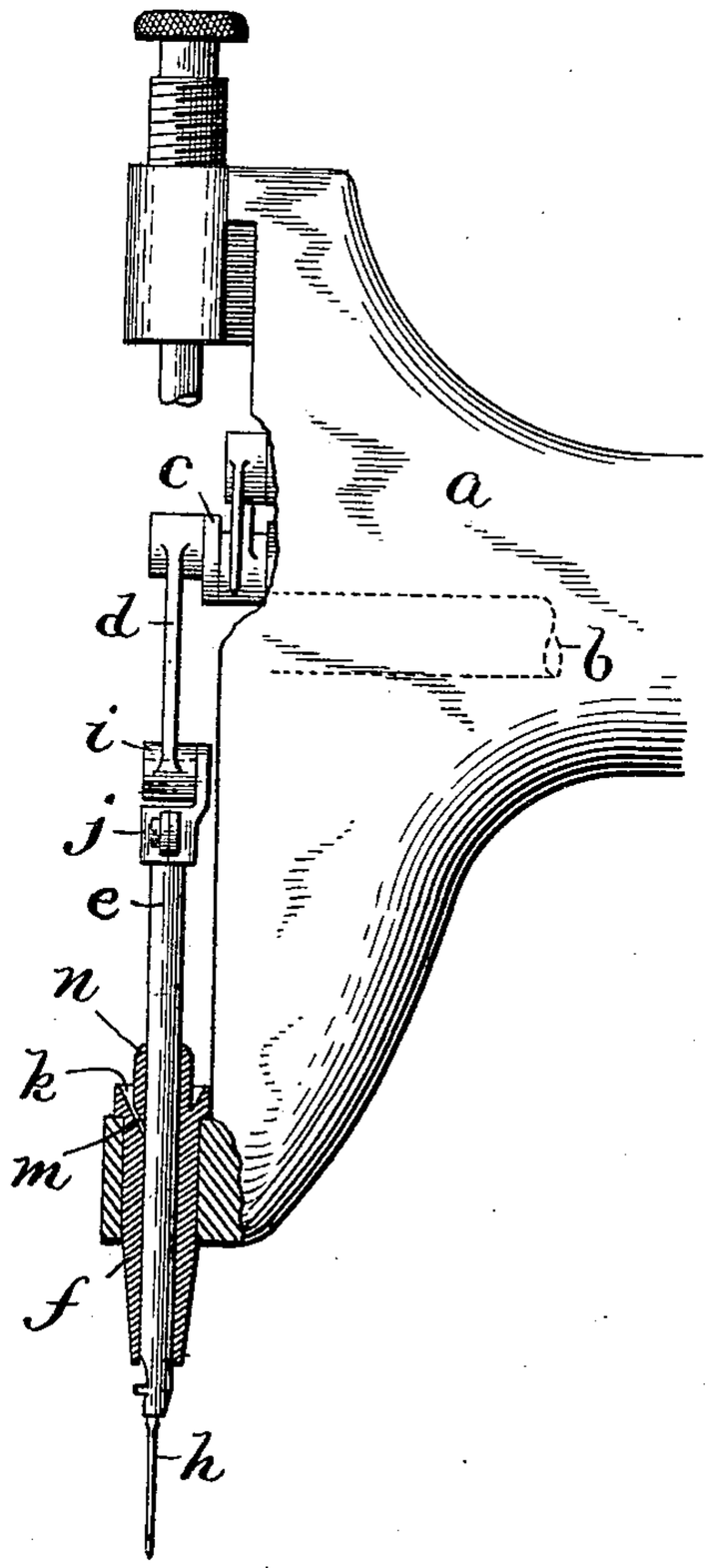

Fig. 2.

Witnesses:
J. B. McGivr.
L. M. Sweeny.

Inventor:
Edward B. Allen
by Munn & Co.
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD B. ALLEN, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, OF NEW JERSEY.

SEWING-MACHINE NEEDLE-BAR MECHANISM.

SPECIFICATION forming part of Letters Patent No. 678,927, dated July 23, 1901.

Application filed January 10, 1901. Serial No. 42,747. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. ALLEN, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machine Needle-Bar Mechanisms, of which the following is a specification, reference being had therein to the accompanying drawings.

In the operation of high-speed sewing-machines there is sometimes so much friction on the needle-bar that the latter is liable to heat in its bearings owing to the fact that there is a considerable amount of side thrust on the needle-bar due to the connection of the operating-pitman therewith at one side of a collar forming the usual connection between the said pitman and the needle-bar.

This invention has for its object to avoid the side thrust referred to as far as possible, and thus lessen the friction between the needle-bar and its bearing, this object being effected by a pitman connection which is over the top of the needle-bar and the joint of which is preferably central with the longitudinal axis of the said needle-bar.

The invention also relates to means for continuously lubricating the needle-bar bearing with little oil, so that danger of soiling the work by surplus oil from the needle-bar will be avoided.

In the accompanying drawings, Figure 1 is a front end view of the upper part of a sewing-machine embodying the invention; and Fig. 2 is a side view of the same, showing only the forward part of the arm of the machine and the parts mounted therein.

Referring to the drawings, *a* denotes a portion of the arm of a sewing-machine in which is mounted a rotating driving-shaft *b*, provided with a crank *c*, connected by a link or pitman *d* with the needle-bar *e*, reciprocating in a bearing-sleeve *f* and carrying the usual eye-pointed needle *h*. The pitman *d* is connected to the needle-bar *e* directly over the top of the latter, the joint *i* between said pitman and the collar *j*, attached to the needle-bar, being preferably central directly over said needle-bar and the pitman being also preferably central lengthwise of the machine over the needle-bar, as shown in Fig. 2. The collar *j*, clamped or otherwise suitably secured to the top of the needle-bar, is provided with a single upwardly-projecting ear or lug, to which the lower end of the pitman *d* is jointed. This construction provides for a light and compact connection between the said needle-bar and pitman. By thus connecting the pitman to the needle-bar over the top of the latter instead of to the side of a collar secured to the needle-bar, as has heretofore usually been done, and, more particularly, by having the joint between the pitman and the needle-bar collar central over the top of said bar, as shown in Fig. 1, side thrust on the needle-bar is avoided, so that the needle-bar can be driven with the least possible friction, and liability of heating of the needle-bar at the highest speeds is likewise avoided.

In order to lubricate the needle-bar properly with the smallest possible amount of oil, so as to avoid danger of soiling the work from any dripping of oil from the needle-bar or its bearings, the bearing-sleeve *f* is preferably provided at its top with an annular groove *k*, to serve as an oil-cup, one or more oil-ducts *m* being provided to permit the oil to flow from said oil-cup to the needle-bar bearing in the said sleeve. Surrounding the needle-bar and encircled by the oil-cup *k* is a small boss *n*, which when the needle-bar rises and carries oil up with it will serve as a stripper to remove the surplus oil from the needle-bar when the latter descends, and which oil will thus flow over the said boss and return to the oil-cup and will flow thence through the oil duct or ducts *m* and again find its way to the upper part of the needle-bar bearing within the sleeve *f*. As the lubricating-oil will thus be applied to the needle-bar bearing near the top of the latter and as the surplus oil will be constantly stripped from the needle-bar by the boss *n*, it results that only sufficient oil will ever reach the lower part of the needle-bar to keep the latter properly moistened, and consequently no surplus oil will ever collect at the lower end of the needle-bar to drip down and soil the work. As a matter of fact it has been demonstrated by practical use continued for several months that a needle-bar lubricated in the manner just described will run for a long time and be kept prop-

erly lubricated with only a drop or two of oil, the needle-bar serving as a piston to pump the oil up and the oil-stripping boss *n* serving as a stripper to return the surplus oil to the oil-cup, so that the oil may again find its way to the needle-bar bearing, and thus, as the oil will be used over and over again, a very small quantity of oil will keep the needle-bar suitably lubricated for a very long time and there will be no possibility of surplus oil dripping down upon the work.

The invention will not be understood as being limited to the exact details herein shown and described, as the needle-bar pitman might be slightly displaced from a central position relative to the needle-bar, providing its pivoted connection with the needle-bar collar be central over the top of said needle-bar, without seriously detracting from the value of the invention, and other slight variations might be made without departing from the spirit of the invention. Also the invention might be employed in connection with a rocking needle-bar-operating shaft as well as with a rotating shaft, as will be understood.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a sewing-machine, the combination with the driving-shaft *b* provided with the crank *c*, of the needle-bar *e* provided at its top with the collar *j* having a single, upwardly-projecting ear or lug, and the pitman *d* connected to said crank and having a jointed connection with said ear or lug and which jointed connection is located centrally over the top of said needle-bar.

2. In a sewing-machine, the combination with a needle-bar and its operating mechanism, of a bearing-sleeve within which said needle-bar reciprocates and which is provided at its top with an oil-cup having one or more oil-ducts extending from said oil-cup to the upper part of the needle-bar bearing interior of said sleeve, said sleeve having also at its top a small boss surrounding said needle-bar and encircled by said oil-cup, said boss serving as a stripper to remove the surplus oil from the needle-bar and return it to the said oil-cup whence it flows, through said oil duct or ducts, to the said needle-bar bearing; whereby the oil is applied to the needle-bar near the upper part of its bearing and surplus oil is removed from the needle-bar to be used again.

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

EDWARD B. ALLEN.

Witnesses:
HENRY CALVER,
HENRY J. MILLER.