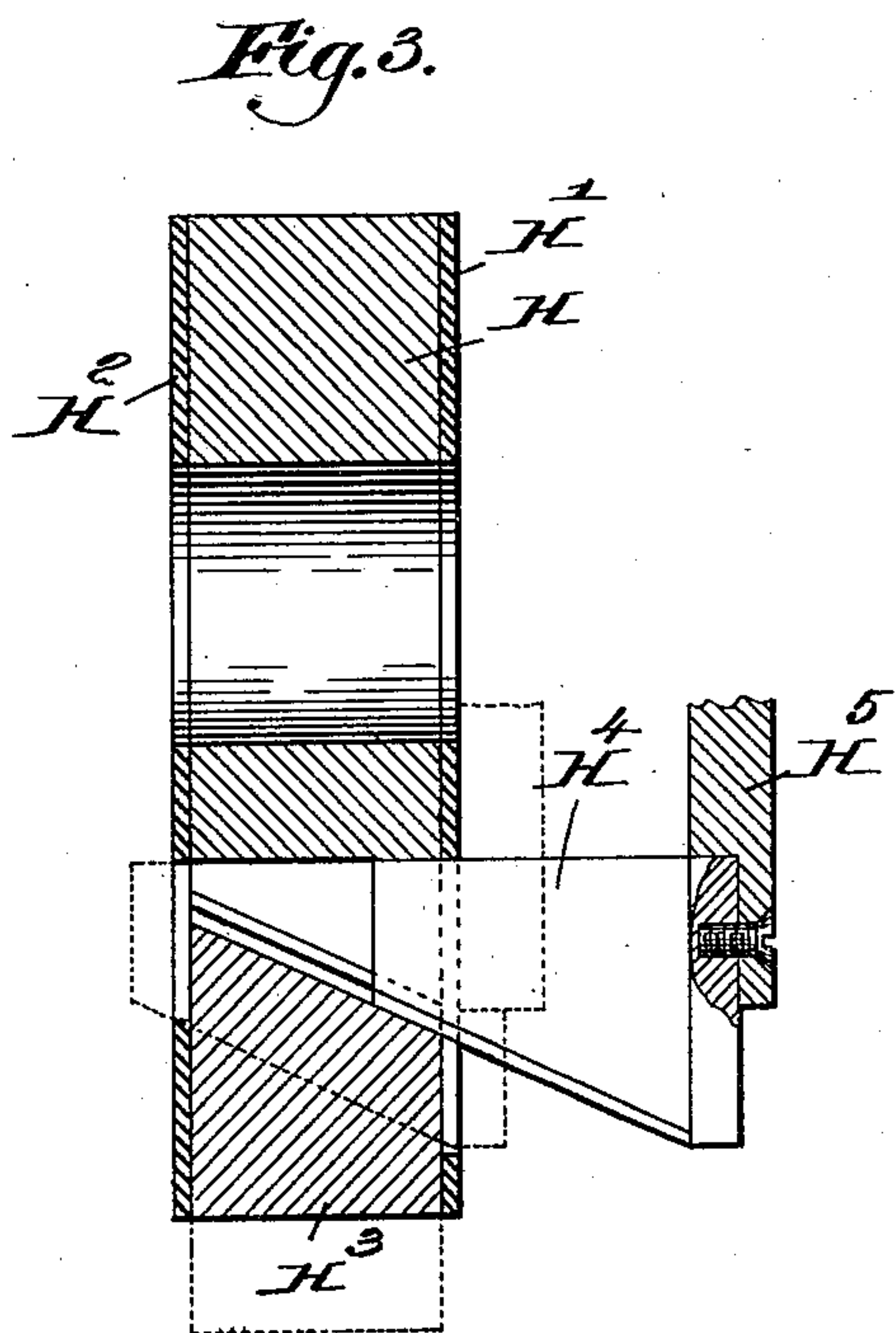
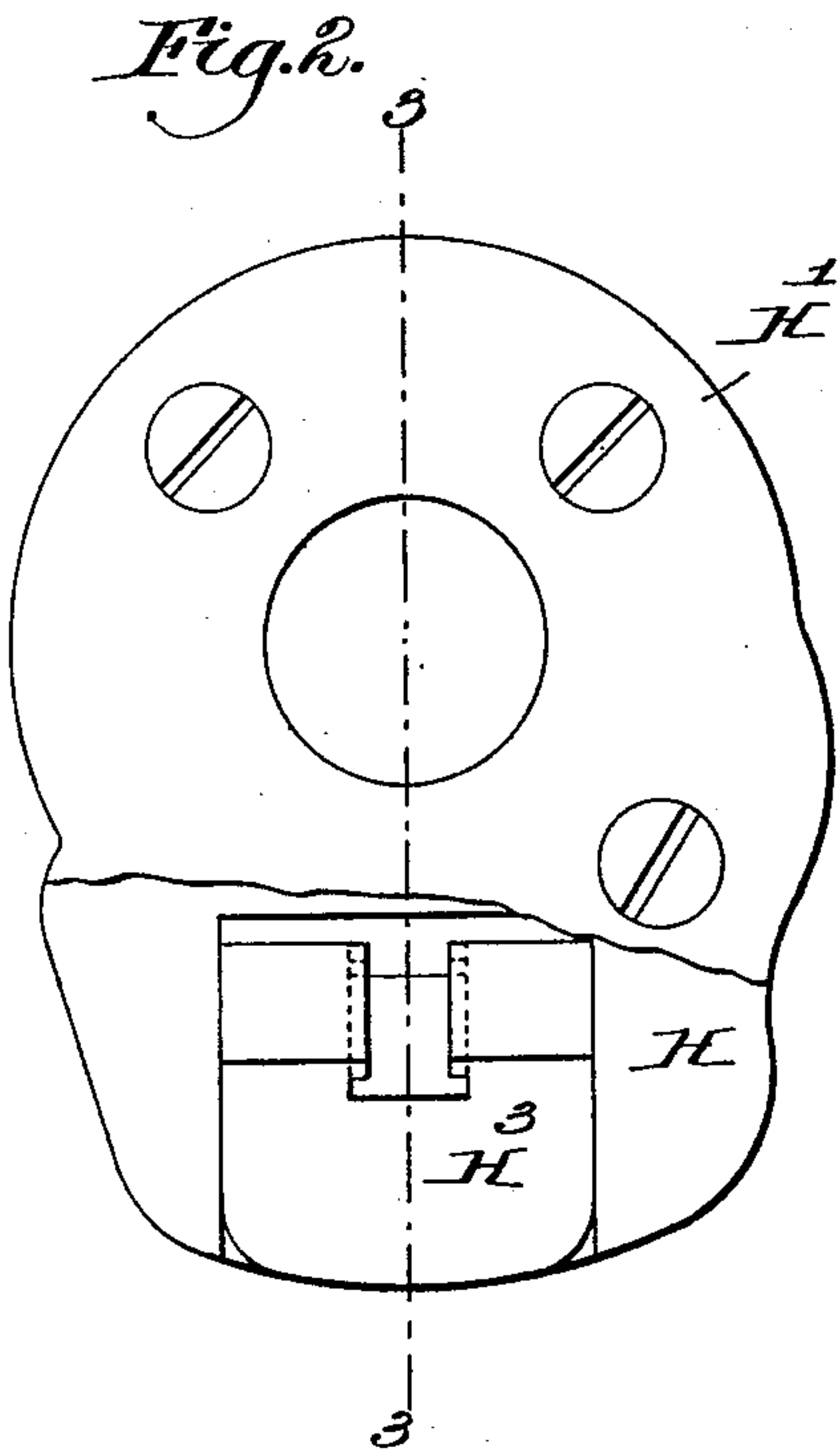
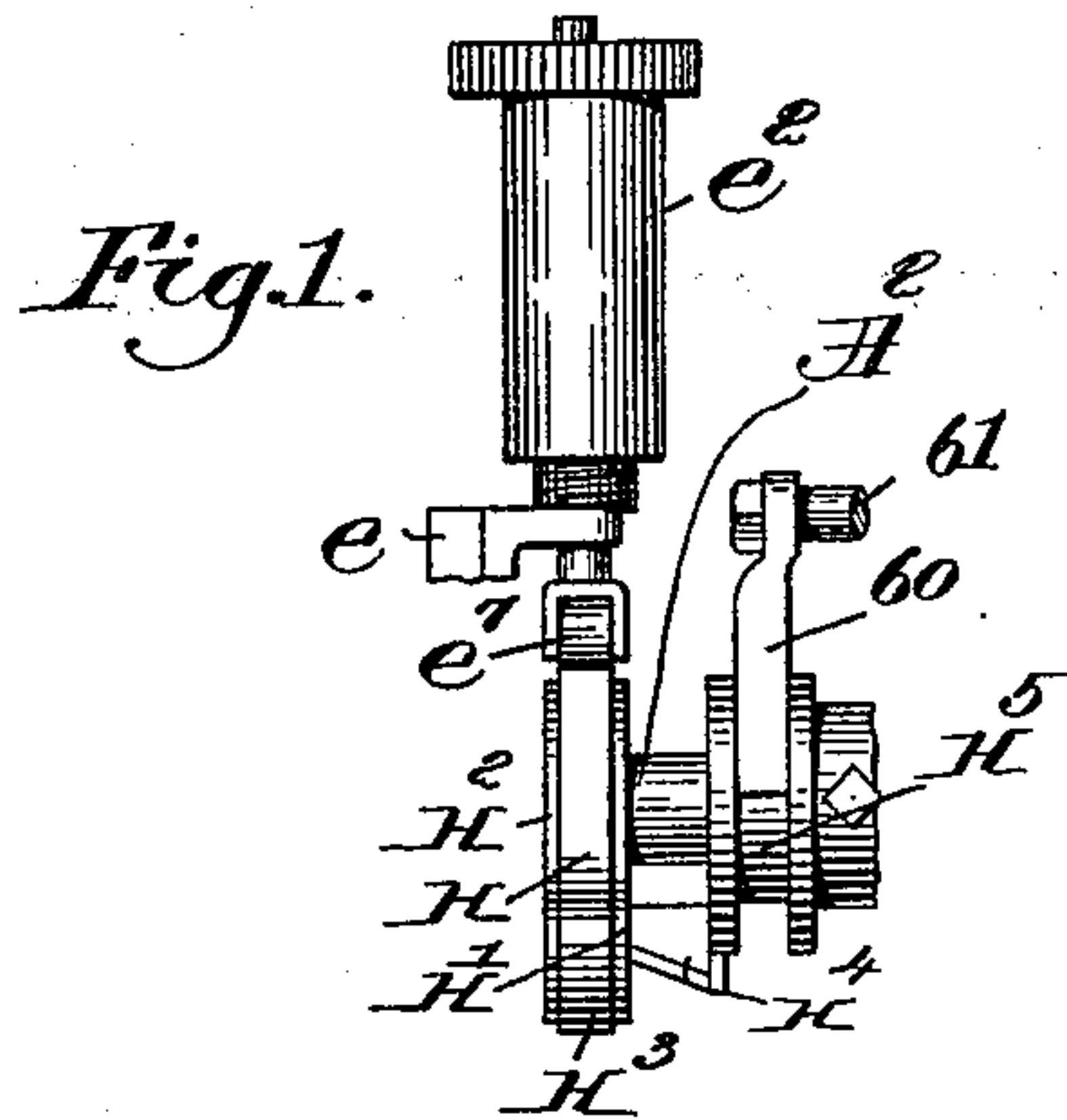


(No Model.)

C. P. LAWRENCE.
EXPANSION CAM.

No. 583,688.

Patented June 1, 1897.



Witnesses:

A. C. Harmon

Thomas J. Drummond

Inventor

Charles P. Lawrence
by Crosby Gregory att'ys.

UNITED STATES PATENT OFFICE.

CHARLES P. LAWRENCE, OF NORWAY, MAINE.

EXPANSION-CAM.

SPECIFICATION forming part of Letters Patent No. 583,688, dated June 1, 1897.

Application filed February 7, 1895. Serial No. 537,574. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. LAWRENCE, of Norway, county of Oxford, State of Maine, have invented an Improvement in Expansion-Cams, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to provide a novel cam capable of expansion by the operator for the purpose of varying its throw as necessity may require. In many machines—such, for example, as lasting or pulling-over machines, where the lasting operation or the operation of the nippers which act upon the leather is controlled by a cam—there has heretofore to my knowledge been no means for varying the action of the lasting devices or nippers for pulling over or stretching the leather to a greater or less extent according to its weight or condition.

By the use of an expansion-cam embodying my invention, if it is found that the usual throw of the cam is insufficient to properly stretch or pull over the leather, the operator by a simple movement may vary the throw of the cam to increase or magnify its action.

In the drawings I have illustrated my invention in connection with a detail of a lasting-machine, Figure 1 showing in front elevation my invention in operative position. Fig. 2 is an enlarged side elevation of the cam, partly broken away, the operating-wedge being omitted. Fig. 3 is a central vertical section taken on the line 3 3 of Fig. 2.

Referring to the drawings, while I have illustrated my invention as used in connection with a lasting-machine, yet it should be understood that my invention is not limited as to its use to any particular machines or class of machines.

The cam is composed of a body H and two side plates H' H², the body having an adjustable throw point or block H³, adapted to slide radially between the side plates referred to and provided with a dovetailed groove, which is entered by the corresponding dovetailed wedge H⁴, shown as rigidly connected with a groove-collar H⁵, splined on the main shaft A² and rotatable therewith, but having an

axial movement along the said main shaft to cause its wedge to move the throw-block H³ of the cam in or out, as may be necessary to vary the throw of the cam.

The grooved collar H⁵ receives a fork 60, connected with a rod 61, to slide the collar back and forth as required on the shaft A², a bracket e being shown supporting a roll e⁷ to be operated by the cam, the roll e⁷ being held against the cam by the usual spring (not shown) in the spring-barrel e².

In use the cam is positively operated by reciprocating the collar H⁵ on the main shaft, the wedge H⁴ then sliding back and forth in the dovetailed groove of the throw-block transversely of the cam. This serves to expand and contract the cam, the cam-surface thereof changing in shape correspondingly, within the two extreme positions shown in Fig. 3 by full and dotted lines.

While such a cam is particularly useful in lasting and pulling-over machines, yet its use is not limited in this respect, for it may be applied to any kind of machine where a variable cam movement is desired.

Having described one form of my invention, what I claim, and desire to secure by Letters Patent, is—

1. An expansion-cam, having a movable throw-block carried thereby as a constituent part thereof, combined with a wedge carried by said cam, and interlocked with the throw-block, interlocking means being provided therefor on the wedge and throw-block and means to move said wedge to vary the position of the throw-block, substantially as described.

2. An expansion-cam, having a throw member movable therein and provided at its inner end with a dovetailed edge, a grooved collar, and its attached dovetailed wedge, cooperating with and to positively vary the position of the said throw member out and in relatively to the remaining cam-surface of the cam, substantially as described.

3. A cam-body, having a throw member forming a constituent part thereof, said throw member being movable relatively thereto in a radial direction, whereby said cam may be expanded or contracted and the cam-surface

thereof changed in shape, and a wedge moving parallel to the axis of the said cam-body, said wedge having means whereby the same is movably connected to said throw member
5 to positively move the same in and out, substantially as described.

In testimony whereof I have signed my

name to this specification in the presence of two subscribing witnesses.

CHARLES P. LAWRENCE.

Witnesses:

HOWARD D. SMITH,

M. P. SMITH.