

(No Model.)

E. HALL.
ROTARY LOOPER FOR SEWING MACHINES.

No. 420,449.

Patented Feb. 4, 1890.

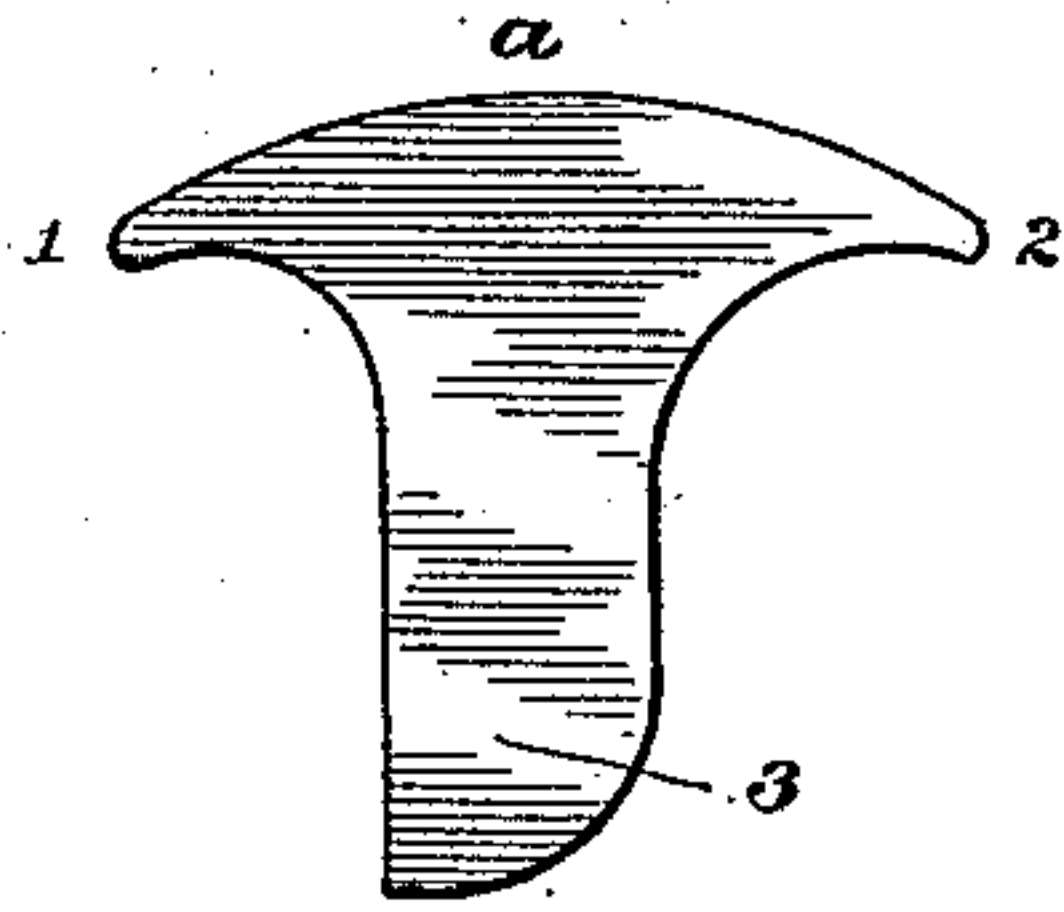


Fig. 1.

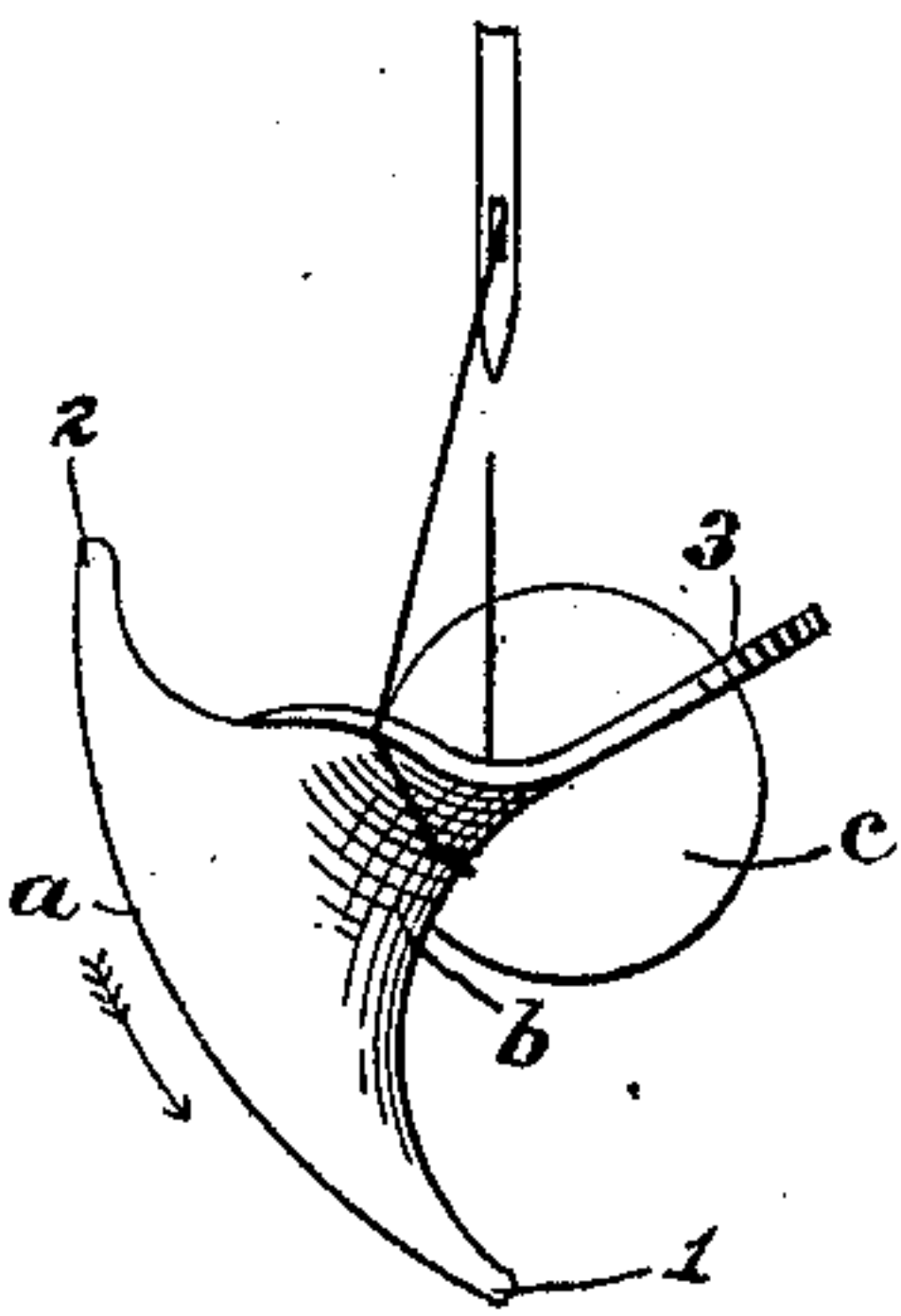


Fig. 2.

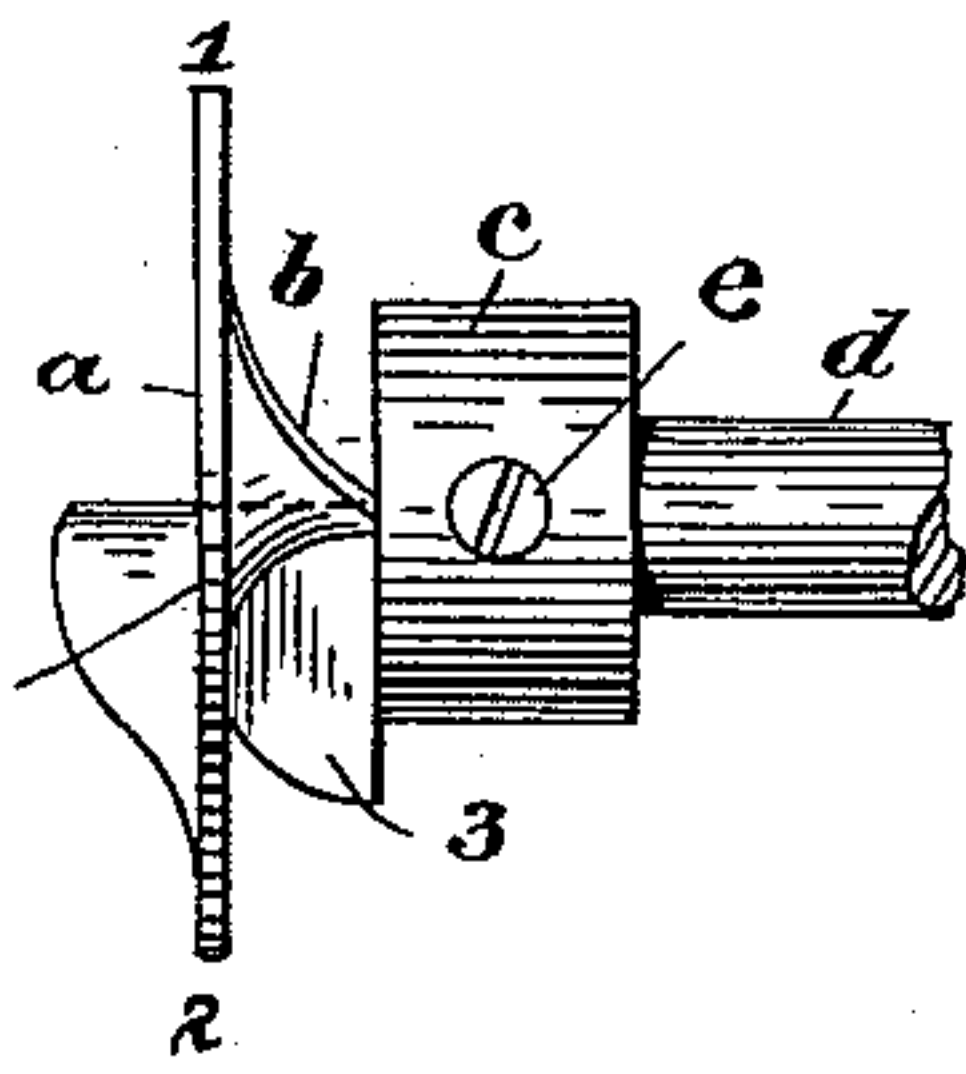


Fig. 4.

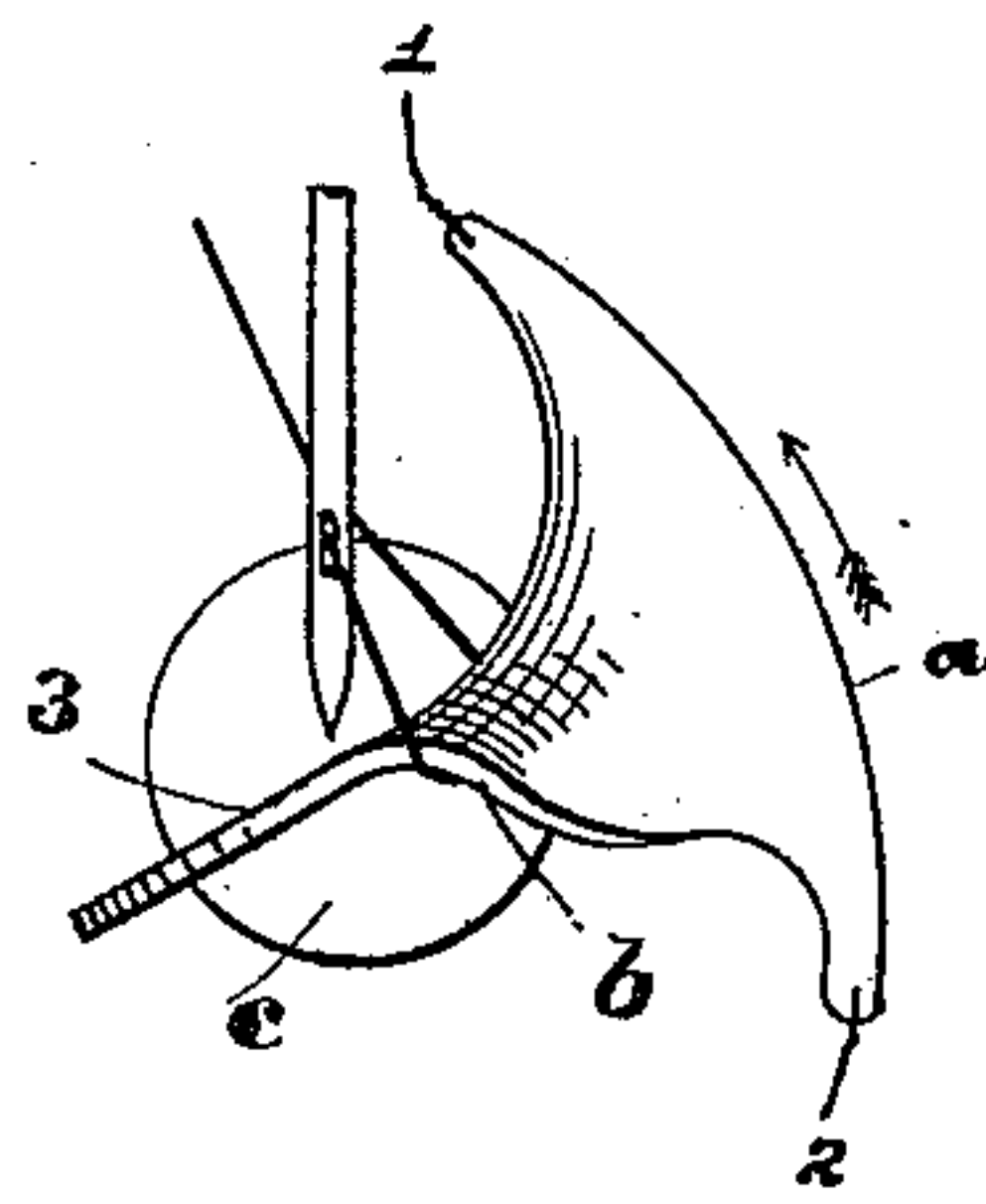


Fig. 3.

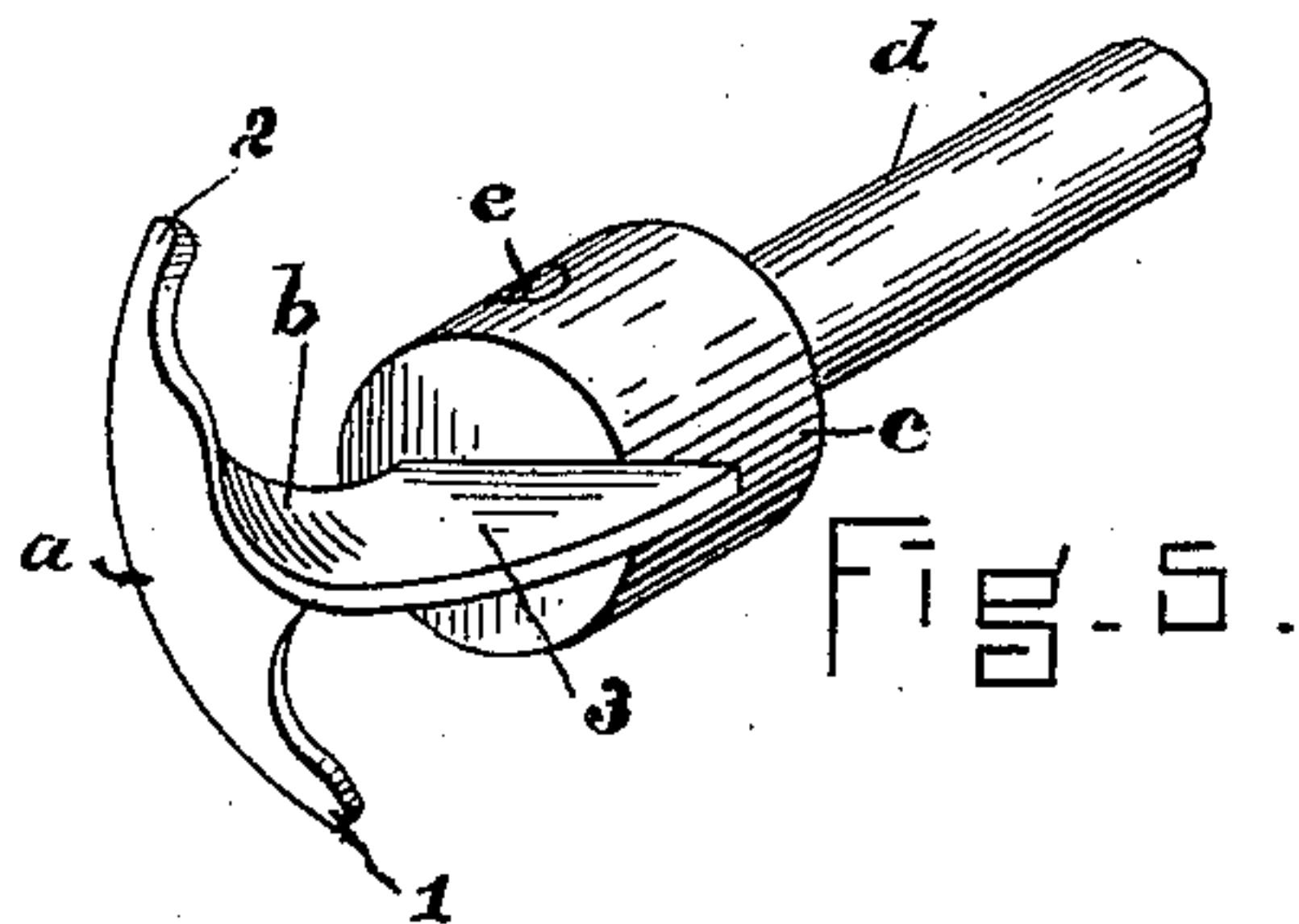


Fig. 5.

WITNESSES.

R. Henry Marsh.
J. O. Bishop.

INVENTOR.

Edgar Hall,
by A. H. Bennett,
his attorney.

UNITED STATES PATENT OFFICE.

EDGAR HALL, OF CAMBRIDGE, MASSACHUSETTS.

ROTARY LOOPER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 420,449, dated February 4, 1890.

Application filed May 11, 1889. Serial No. 310,452. (No model.)

To all whom it may concern:

Be it known that I, EDGAR HALL, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Sewing-Machine Rotary Loopers, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention consists of a peculiarly-formed sheet-metal rotary hook or looper for sewing-machines, and was originally presented as part of the invention set forth in my application, Serial No. 235,639, for patent on sewing-machine, filed April 21, 1887, such application being subsequently renewed December 10, 1889, Serial No. 333,196.

My improved looper-hook is made from a sheet-metal blank, and has an arc-shaped portion, including its hooked entering-point and let-off point standing edgewise in the plane of rotation, and a broad wing or spreader, which opens the loop and turns it around, and which is twisted on a curve from said plane and stands flatwise or at right angles thereto. The hook has at no part a thickness greater than that of the metallic sheet, and it enters and leaves the thread-loop edgewise. It is properly secured to the end of the rotary shaft, and I prefer to locate the wing or spreader at a slight remove laterally from the axial line to clear the needle-point.

In the drawings, Figure 1 represents the general form of the flat blank from which my improved looper-hook is made. Figs. 2 and 3 are end views of the hook complete secured to the collar on the rotary shaft and showing its relation to the reciprocating needle. Fig. 4 is a side elevation, and Fig. 5 a perspective view.

My improved rotary hook is of polished sheet metal struck out by dies as a flat blank from a sheet or strip of suitable character and twisted into the form desired. The arc-shaped portion *a* has at one end the hooked point 1, which enters edgewise into the thread-loop the instant it is thrown out as the needle begins to ascend, and at its other end has the let-off point 2, which holds onto and guides the decreasing loop of the preceding stitch and prevents it from becoming kinked as it is drawn up and tightened under the

goods being sewed. These parts 1 & 2 maintain constantly this edgewise position in the plane of rotation perpendicular to the axis of the shaft *d*, thus securing greater stiffness of the hook as its strains are borne edgewise and greater speed, as the point 1 can enter the thread-loop as soon as it is thrown out a distance equal to the thickness of the sheet metal.

Another essential part of the device is the broad wing or spreader 3, which is twisted out of the plane of rotation into one transverse to that of the arc-shaped portion, and, standing flatwise, serves to spread the loop, turn it around, and hold it open in proper relation to the needle and the thread-loop of the succeeding stitch. The intermediate part *b* of the hook is curved gradually, so as to properly merge the edgewise and flatwise portions. This curvature causes the thread to be drawn across the concavity of the hook free for some distance from surface contact. This reduces friction on the thread, which would tend to abrade it, and also gives room to introduce a cutting-point beneath the thread, by which to sever it when desired. There is also less danger of heating the sheet metal in rapid work and a decided saving in cost as compared with the ordinary solid hooks.

The looper is preferably soldered to a disk or collar *c*, having a central perforation to fit the end of the shaft *d*, to which it may be secured by a set-screw *e*. In this way the looper may be adjusted accurately to correspond in position with the needle and other parts of the machine.

The looper is represented as set with the spreader 3 out of the axial line of the shaft, this removal being in the direction below the axis when the needle is most depressed, giving room for its point to move freely.

I do not claim, broadly, a sheet-metal rotary hook, for I am aware of the patent to Hine, April 11, 1882, No. 256,215, showing a hook of that material simply bent flatwise and having no arc-shaped or other portion twisted into edgewise position.

I therefore claim as my invention—

In a sewing-machine, a rotary looper-hook having the following essential parts of sub-

stantially uniform thickness, viz: the hooked
point 1, the let-off point 2, and the metal con-
necting them arranged edgewise—that is, in
the plane of rotation—and the broad wing or
5 spreader 3, arranged flatwise—that is, in a
plane transverse to that of rotation—said
edgewise and flatwise parts meeting in a curve,
substantially as and for the purpose set forth.

In testimony whereof I have signed my name
to this specification, in the presence of two sub- 10
scribing witnesses, on this 7th day of May, A.
D. 1889.

EDGAR HALL.

Witnesses:

A. H. SPENCER,
JAMES P. PRINCE.