

(No Model.)

L. P. CLAWSON.

JORDAN ENGINE FOR GRINDING PAPER STOCK.

No. 341,223.

Patented May 4, 1886.

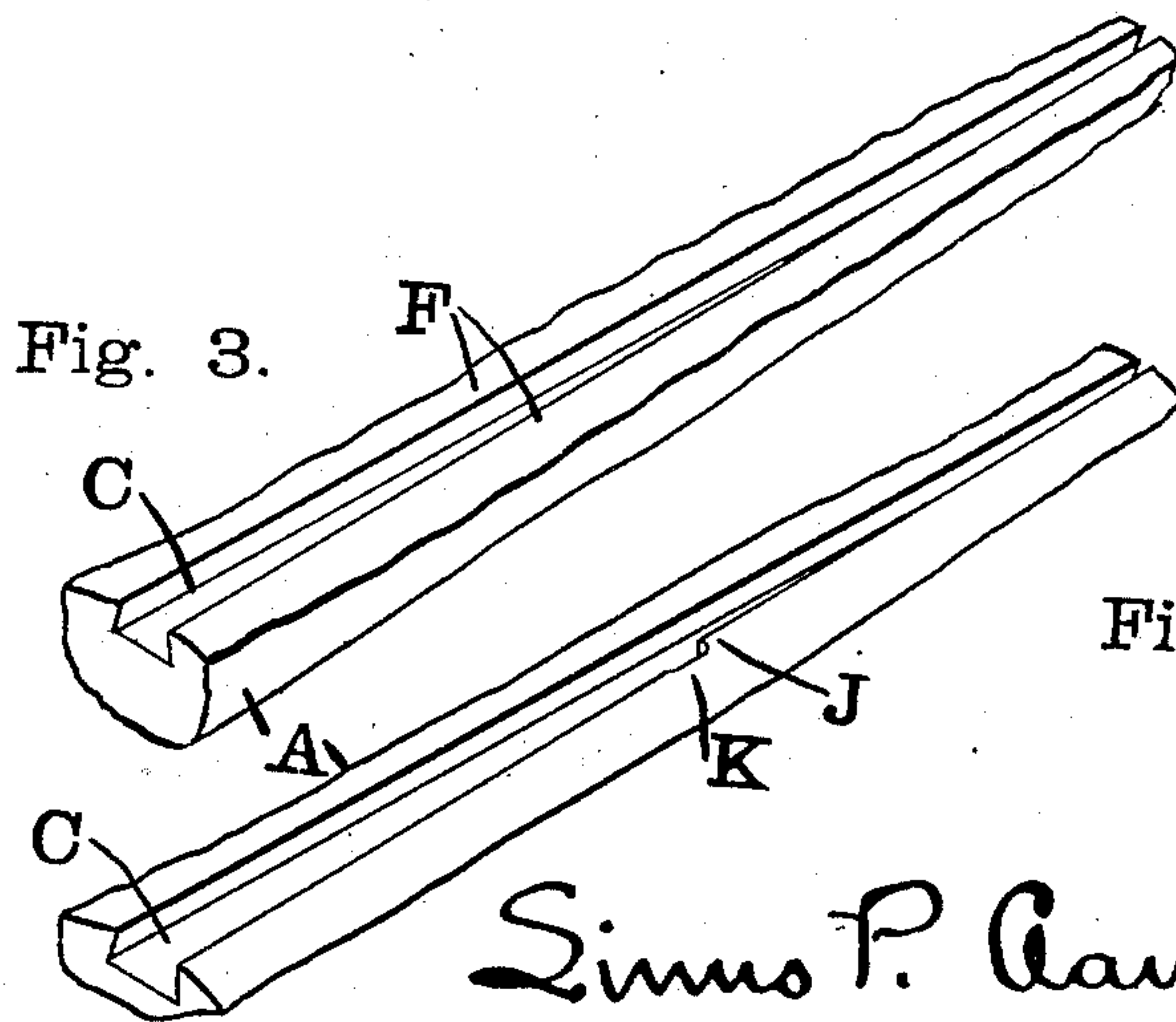
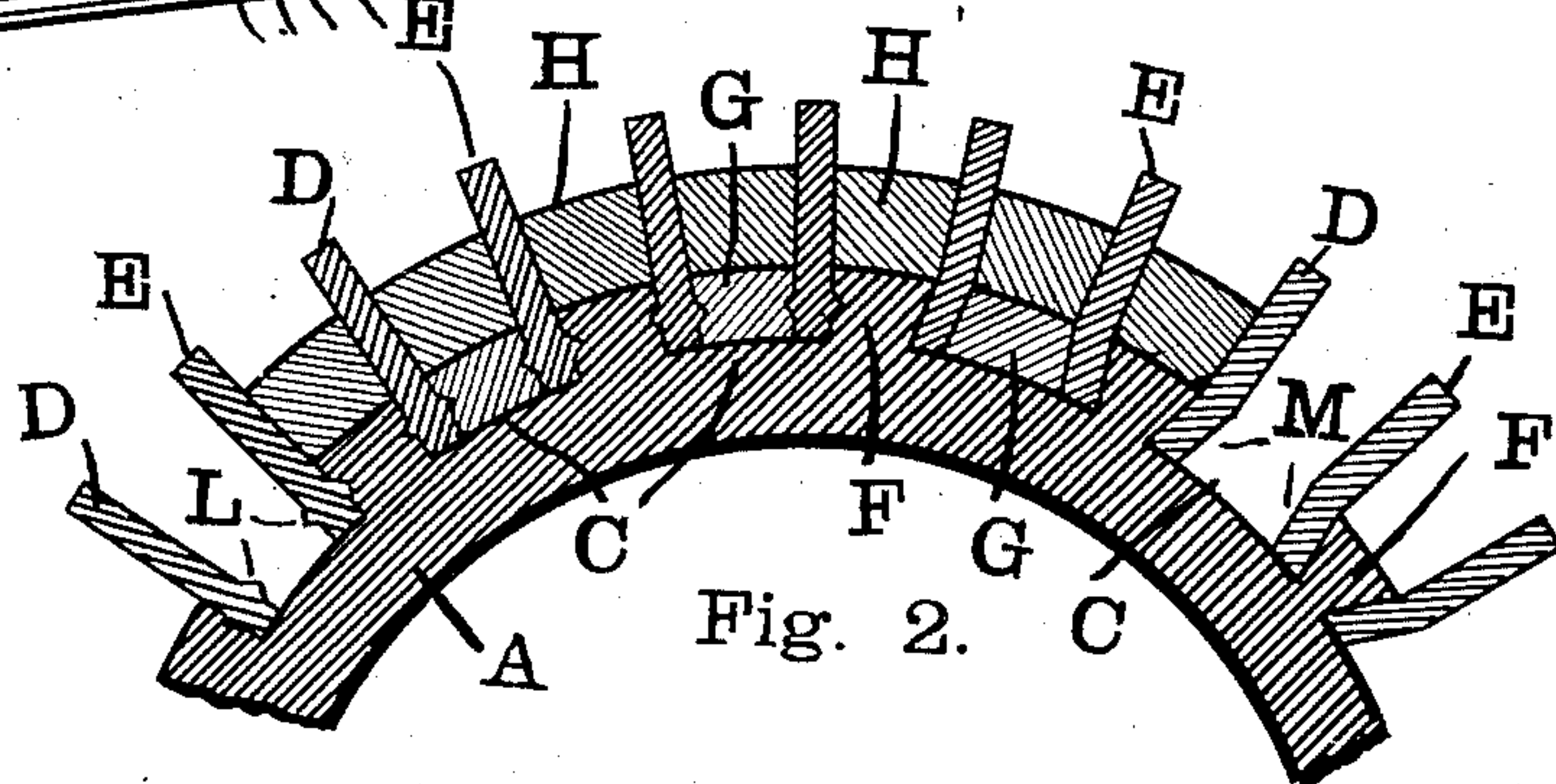
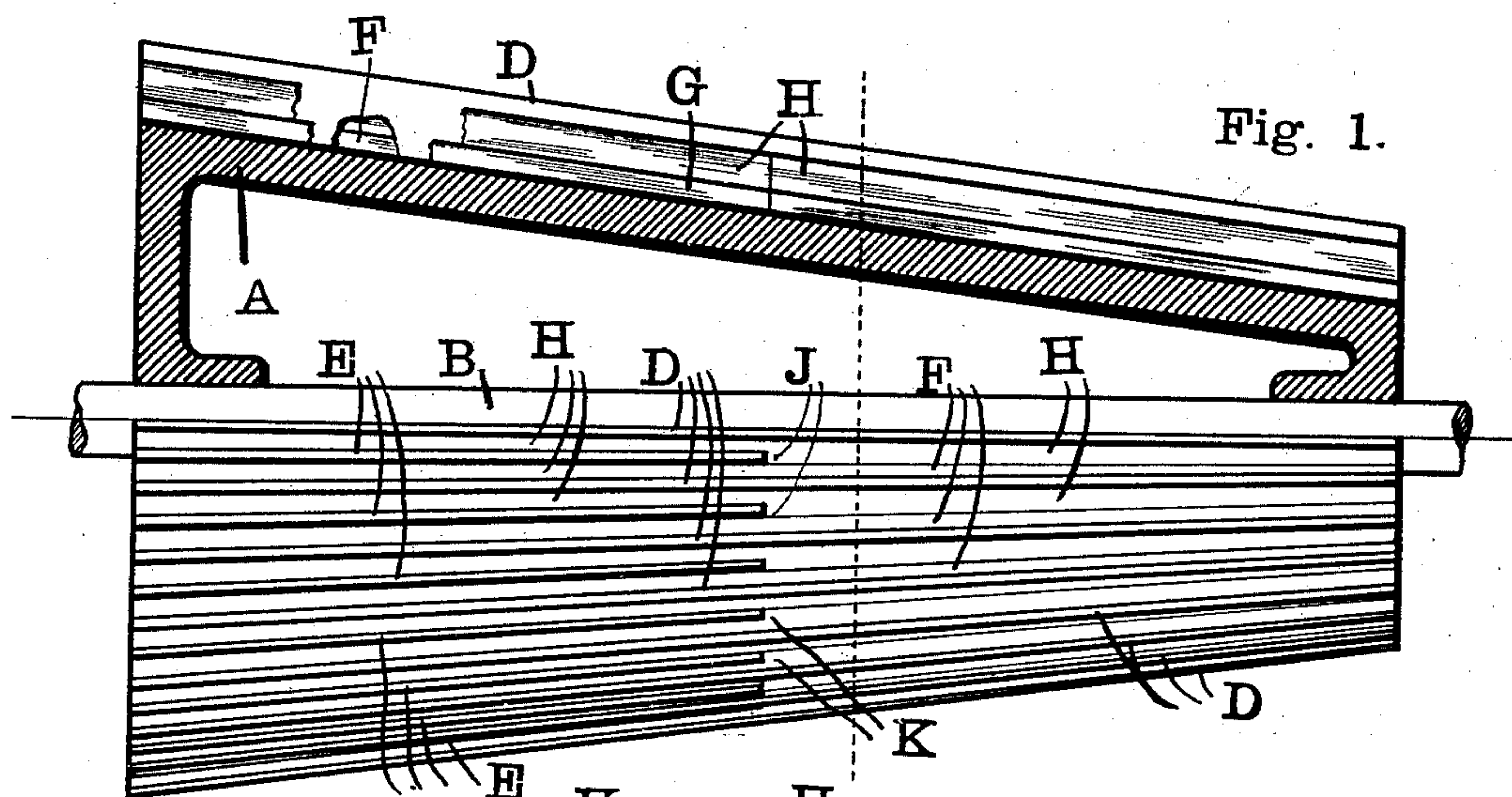


Fig. 4.

Witnesses:

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UNITED STATES PATENT OFFICE.

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JORDAN ENGINE FOR GRINDING PAPER-STOCK.

SPECIFICATION forming part of Letters Patent No. 341,223, dated May 4, 1886.

Application filed December 21, 1885. Serial No. 186,282. (No model.)

To all whom it may concern:

Be it known that I, LINUS P. CLAWSON, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Jordan Engines for Grinding Paper-Stock, of which the following is a specification.

This invention relates to the well-known Jordan engines as used by paper-makers in grinding paper-stock, and the improvements relate to the manner of securing the knives in the revolving cone.

The improvement will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a revolving cone of a Jordan engine, the upper half of the cone being shown in vertical longitudinal section; Fig. 2, an enlarged transverse section of a portion of the cone; Fig. 3, a perspective view of a portion of the periphery of the cone-shell, showing one of the knife-receiving grooves; and Fig. 4, a similar view showing the groove-offset.

In the drawings, A indicates the shell of the cone; B, the shaft to which the cone is secured; C, a circumferential series of longitudinal grooves formed in the periphery of the shell, narrowing sidewise as they approach the smaller end of the cone; D, the usual long knives of the cone, extending from one end of the cone to the other, and disposed one knife against one of the sides of each of the grooves; E, the usual short knives, extending from the large end of the cone for about half its length, and disposed one knife in each of the grooves against the wall of the groove opposite the long knife; F, the longitudinal ribs on the shell, resulting from the presence of the grooves; G, wedges of wood or other material driven into the grooves between the knives; H, the usual woods or lags inserted between the knives, and serving by their thickness to govern the radial projection of the knives beyond the peripheral surface of the cone; J, the inner end points of the short knives; K, offsets in that wall of each groove against which seat the short knives, such offset occurring at about the end position of the short knife and serving to narrow the groove from the point of offset to the small end of the cone, the amount of such offset being equal to about the thickness of the

short knives; L, ribs formed upon the sides of the knives near their roots, and M angular bends at the roots of the knives, adapted for use in connection with grooves having a dovetail section.

The knives may be formed of strips with parallel plain sides; or they may be formed with ribs, as indicated at L; or they may have the bends, as indicated by M.

The grooves in the shell may have their two walls transversely parallel, or transversely radial, or transversely undercut into dovetail section, as seen at M. If the ribbed knives are employed, the walls of the grooves would be longitudinal grooves to receive the ribs.

In putting these knives in, the procedure is as follows: A long knife is laid against one side of a groove. A wedge adapted to reach from the point J to the small end of the cone is then driven into the groove from the big end until its hub reaches the point J, and the groove is tightly filled. A short knife is then placed against the opposite wall of the groove. A wedge wider than that before used is then driven into the groove between the two knives, and so on till all the knives are properly secured, after which the woods H are inserted by driving, either longitudinally or transversely.

It will be understood that, if that wall of the groove against which the short knife is seated is plain or free from offset, a single long wedge the whole length of the cone cannot be driven unless the short knife be laid alongside the large end of the wedge and both driven together. This plan is not commendable, and hence I prefer to offset that wall of the groove against which the short knife seats, such offset serving to narrow the groove an amount equal to the thickness of the short knife, as seen at K. This offsetting of the wall of the groove permits a single long wedge to be driven after both knives are in place, instead of using two short wedges, as before mentioned. If the grooves are given a dovetail section and knives with bent roots are employed, as indicated at M, then the wedges employed will have a dovetail cross-section. If knives having ribs, as indicated at L, are employed, then the wedges should be grooved for the ribs, which grooving may be effected by a mere longitudinal shallow saw-cut. These

ribs serve to prevent any radial displacement of either knives or wedges.

The woods H, when new, are of the thickness to give the proper radial projection to the knives, and as the knives wear away in use these woods are cut down to restore the projection to the original or any desired amount.

When new knives are to be inserted, the woods H are first removed and then the wedges are driven out. As soon as they are driven outward a slight distance endwise the wedges and knives are loose and can be easily removed. The moisture absorbed by the wedges prevents their becoming loose by shrinkage.

I claim as my invention—

1. The combination of a cone shell provided with a circumferential series of longitudinal grooves decreasing in width as they approach the smaller end of the cone, knives seated against the opposite walls of said grooves, and wedges driven into the grooves between the knives, substantially as and for the purpose set forth.

2. The combination of a cone-shell provided with a circumferential series of longitudinal grooves decreasing in width as they approach the smaller end of the cone, long knives seated against one side of the grooves and extending from end to end of the cone, short knives seated against the opposite wall of the grooves and extending from the large end of the cone to a point intermediate of the length of the cone, and wedges disposed in the grooves between the long knives and short knives and between the long knives and the opposite vacant walls of the grooves, substantially as and for the purpose set forth.

3. The combination of a cone-shell provided with a circumferential series of longitudinal grooves reaching from end to end of the cone, and decreasing in width as they approach the smaller end of the cone, and having one of their side walls provided with an offset about equal in amount to the thickness of the short knife employed, short knives seated against those walls of the grooves which are provided with offsets, long knives seated against the opposite walls of the grooves, and wedges dis-

posed in the grooves against the knives, substantially as and for the purpose set forth.

4. The combination of a cone-shell provided with a circumferential series of longitudinal grooves narrowing in width as they approach the smaller end of the cone, and having their side walls longitudinally grooved for the reception of knife-ribs, knives seated against the walls of said grooves, and having ribs upon those surfaces which seat against the walls of the grooves, and wedges disposed within the grooves between the knives, substantially as and for the purpose set forth.

5. The combination of a cone-shell provided with a circumferential series of longitudinal grooves narrowing in width as they approach the smaller end of the cone, knives seated against the walls of said grooves, and having ribs upon the faces in contact with the walls of the groove, and wedges disposed within the grooves between the knives and provided with side grooves to engage the ribs of the knives, substantially as and for the purpose set forth.

6. The combination of a cone-shell provided with a circumferential series of longitudinal grooves narrowing in width as they approach the smaller end of the cone, and having their walls longitudinally grooved for the reception of knife-ribs, knives disposed against the walls of said grooves and having both of their sides provided with ribs, and wedges within the grooves between the knives, and provided with grooves to engage the knife-ribs, substantially as and for the purpose set forth.

7. The combination of a cone-shell having a circumferential series of longitudinal grooves narrowing in width as they approach the small end of the cone, knives disposed within said grooves, knife-holding wedges disposed within said grooves and having a thickness equal to the depth of said grooves, and woods or lags disposed between the knives and having their inner faces bearing against the cone-surface formed by the wedges and by the longitudinal ribs between the grooves, substantially as and for the purpose set forth.

LINUS P. CLAWSON.

Witnesses:

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