D. HEER.

Lathes.

No. 141,347. Patented July 29, 1873.

FIG. 1.

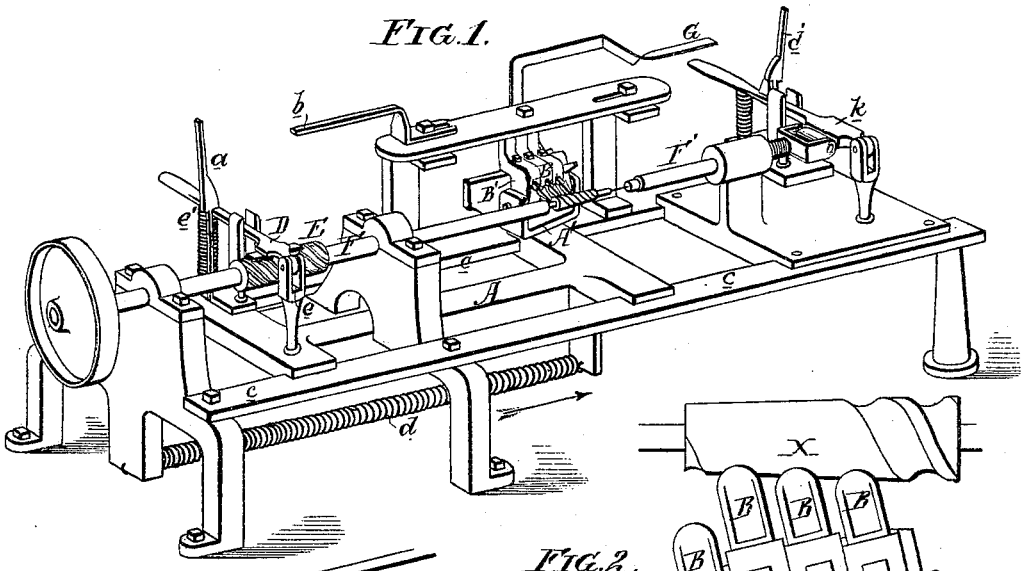


FIG. 2.

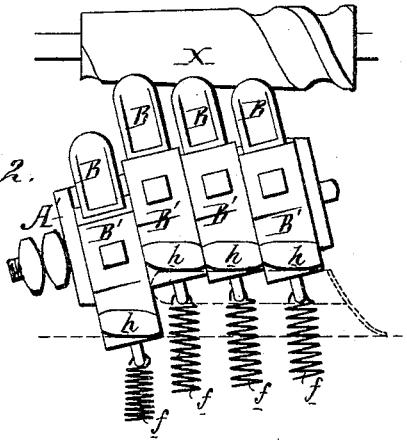


FIG. 4.

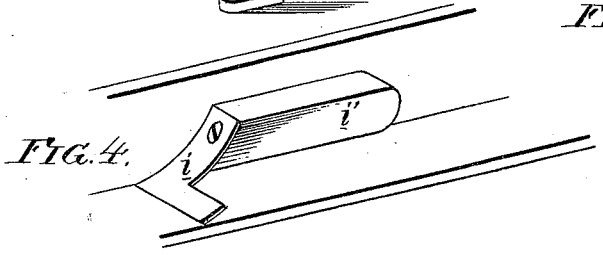
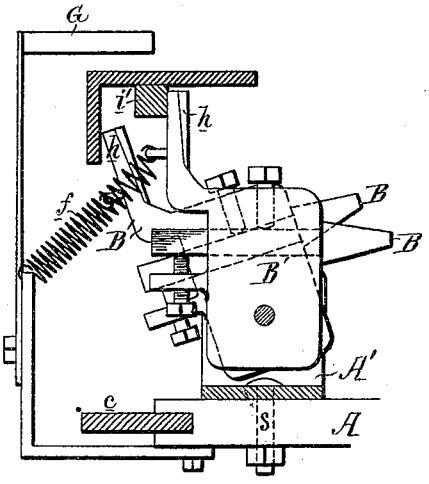


FIG. 3.



Witnesses, Hubert Howson

Thomas McElwain

David Heer

by his attys.

Howson and

UNITED STATES PATENT OFFICE.

DAVID HEER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HENRY D. HIRST, OF SAME PLACE.

IMPROVEMENT IN LATHES.

Specification forming part of Letters Patent No. **141,347**, dated July 29, 1873; application filed April 5, 1873.

To all whom it may concern:

Be it known that I, DAVID HEER, of Philadelphia, Pennsylvania, have invented an Improvement in Lathes, of which the following is a specification:

The object of my invention is to enable a series of spirals or flutings to be rapidly and automatically cut upon the surfaces of cylindrical or conical objects, such as chair-rounds, tassel-tops, &c., and I accomplish this object by the use of the machine shown in the perspective view, Figure 1, of the accompanying drawing, the main peculiarities of which are a carriage, A, carrying a series of fluting-cutters, B, and having an arm, D, a projection or projections on which enter the spiral grooves of a revolving former, E, on the driving-spindle F, the carriage being thus caused to move in the direction of the arrow, so as to carry its cutters, which are forced and held outward by a fixed cam, fast and in contact with the rotating tassel-top or other object to be fluted, the latter being retained between the driving-spindle and a rod, F′, as in a lathe, and being automatically released, when completed, by an arm, G, of the carriage, which strikes and releases certain retaining devices by which the rod F′ is held against the said tassel-top, and after the drawing back of the cutters the whole carriage is, by action of a spring, restored to its original position, owing to the withdrawal of its arm D from the former E, which is automatically accomplished by the striking of a trigger, *a*, against a fixed projection, *b*.

The construction and operation of the machine will be fully understood from the following detailed description.

The carriage A slides upon guides *c* of the frame, directly beneath the driving-spindle F, and is constantly acted on by a spring, *d*, tending to draw it back, or in a direction contrary to that indicated by the arrow. On the driving-spindle there is a former, E, having spiral grooves cut upon it corresponding to the character of the flutings which it is desired to cut in the tassel-top or other object, and into these grooves extends a projection or projections on the under side of an arm, D, hung to the carriage at *e*, constantly acted on by a spring, *e′*, tending to raise it, and held down by means of a spring-trigger, *a*, also attached to the carriage.

The cutters B, of which there are four in the present instance, are attached to levers B′ hung to a projecting-head, A′, of the carriage, as best observed in the enlarged views, Figs. 2 and 3. Each of these levers is independent of the others, and is acted on by a spring, *f*, tending to draw its cutter back from the work, the latter, shown at X, being in the present instance a tassel-top, secured to and rotating with the spindle F, and held against the same by the end pressure of a rod, F′, as in a lathe.

When the arm D is lowered onto the former E, and the machine started, the projections of the said arm will be carried through the spiral grooves of the former, and the carriage will be consequently moved forward in the direction of the arrow, the arms *h* of the levers B′ striking a cam-like incline, *i*, on the fixed frame, and being turned by the same until their cutters B are forced outward toward the tassel-top, against which they are held by a fixed projection, *i′*, of the frame, until they have passed the tassel-top and cut the required flutings in the same, the character of these flutings being determined by the character of the grooves in the former E, from which the longitudinal movement of the carriage and cutters is derived. After passing the tassel-top and fixed projection *i′*, each cutter, owing to the action of the spring upon its lever, drops back to its original position, as shown at the left-hand side of Fig. 2 and in Fig. 3; and after the drawing back of all of the cutters, which occurs on the completion of the fluting operation, an arm, G, of the carriage, which still continues its forward movement, strikes and pushes back a trigger, *j*, thus releasing and permitting the elevation of a spring cam-lever, K, the pressure of the latter against the rod F′ being thus relieved and permitting the same to spring away from and release the tassel-top. The carriage still continues its forward movement until the trigger *a* strikes a fixed projection, *b*, when the said trigger is pushed back sufficiently to release the arm D and permit the same to spring upward from the former E, the carriage, as soon

as this occurs, being drawn bodily backward to its original position by the action of the spring *d* before referred to, the arms *h* of the cutter-levers during this rearward movement passing behind the fixed projection *i'* and its incline *i*, the latter, as best observed in Fig. 4, being of the nature of a spring, so that it may yield and permit the passage behind the same of the said arms. After the restoring of the parts to their original positions another tassel-top, or equivalent object, is adjusted between the centers, and the work goes on as before.

The head A', to which the cutter-levers are hung, is pivoted to the carriage A, as shown at *s*, Fig. 3, which is an important feature, as it enables the angle of the cutters in respect to the work to be altered, as required, to suit the character of the work.

I claim as my invention—

1. The combination, with a former, E, of a carriage operated by the former, and provided with a series of independent cutters, B, attached to levers B', and adjustable to and from the work, substantially as set forth.

2. The combination, with the carriage, of the head A', carrying the cutter-levers, and adjustable on a vertical axis, *s*, as and for the purpose set forth.

3. The combination, substantially as described, of the said cutter-levers B' with the yielding cam-like incline *i*, and fixed projection *i'*.

4. The combination of the arm G on the carriage, the spring-rod F', and the devices described, through the medium of which the said rod may be released by the arm.

5. The combination, with the former E and arm D, of the carriage, projection *b*, and trigger *a*, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID HEER.

Witnesses:
THOMAS MCILVAIN,
HUBERT HOWSON.