2 Sheets—Sheet 1.

J. G. BAKER.

Machine for Rounding the Inner and Outer Edges of Wooden Rings.

No. 213,607. **Patented Mar. 25, 1879.**

FIG. 4.

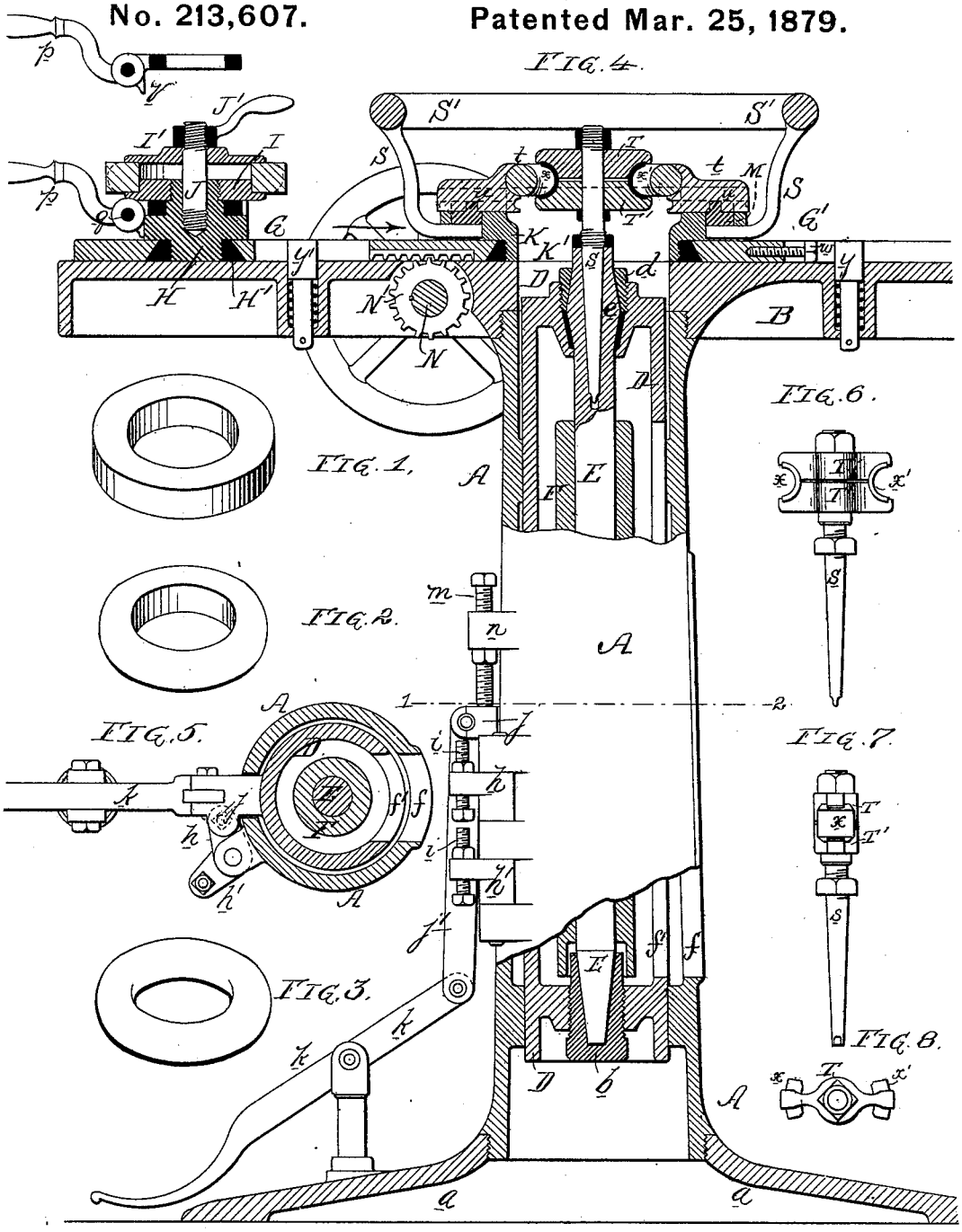

FIG. 1.

FIG. 2.

FIG. 5.

FIG. 3.

FIG. 6.

FIG. 7.

FIG. 8.

Witnesses
Henry Howson Jr.
Harry Smith

Inventor
John G. Baker
by his Attorneys
Howson and Sons

2 Sheets—Sheet 2.

J. G. BAKER.

Machine for Rounding the Inner and Outer Edges of Wooden Rings.

No. 213,607. **Patented Mar. 25, 1879.**

FIG. 11.

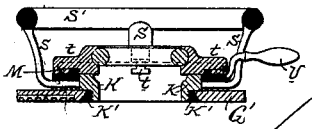

FIG. 12.

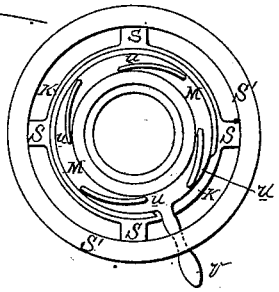

FIG. 9.

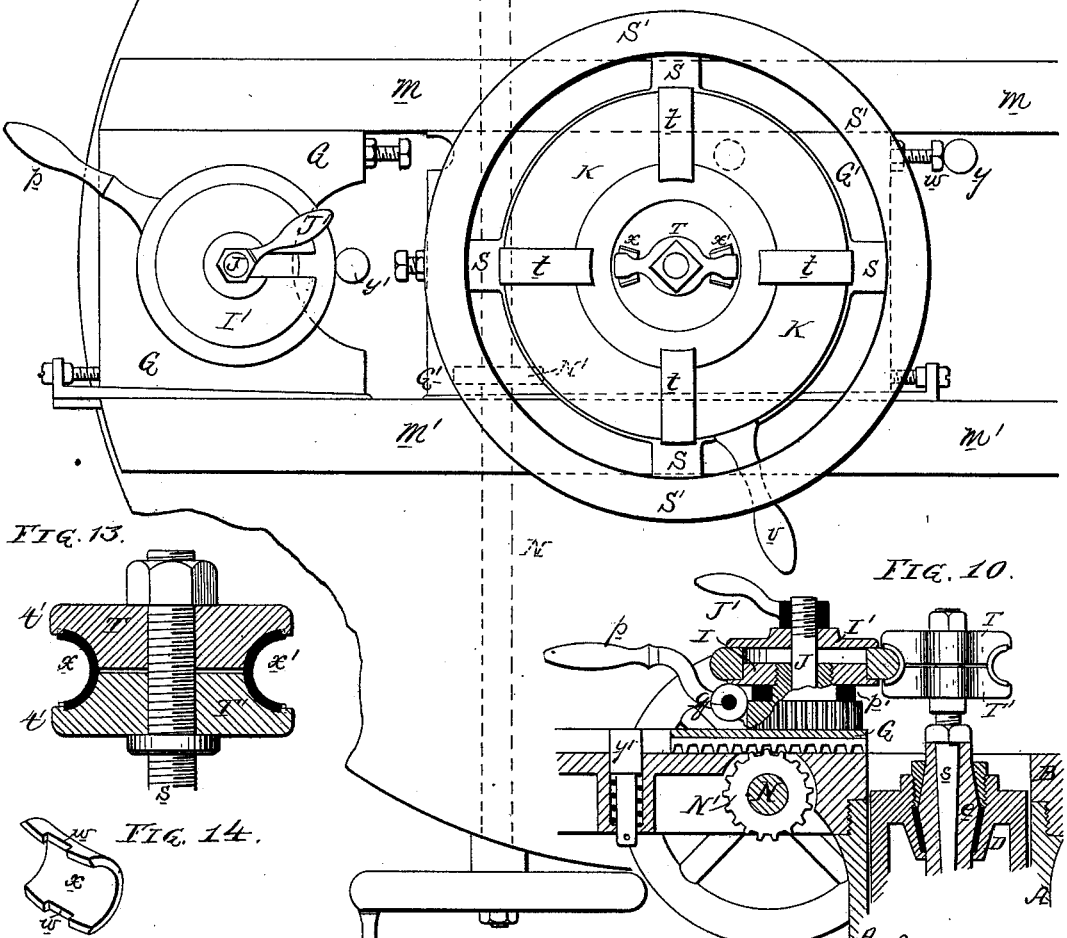

FIG. 13.

FIG. 14.

FIG. 10.

Witnesses
Henry Howson Jr.
Harry Smith

Inventor
John G. Baker
by his Attorneys
Howson and Sons

UNITED STATES PATENT OFFICE.

JOHN G. BAKER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE ENTERPRISE MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR ROUNDING THE INNER AND OUTER EDGES OF WOODEN RINGS.

Specification forming part of Letters Patent No. **213,607**, dated March 25, 1879; application filed December 20, 1878.

To all whom it may concern:

Be it known that I, JOHN G. BAKER, of Philadelphia, Pennsylvania, have invented a new and useful Machine for Rounding the Inner and Outer Edges of Rings, of which the following is a specification:

The object of my invention is to round the inner and outer edges of wooden rings—such, for instance, as those used for curtains, or in the manufacture of handles for sad-irons—and this object I attain by the mechanism which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1, Sheet 1, represents the crude wooden ring to be finished by the machine; Fig. 2, a ring partly finished; Fig. 3, the ring complete; Fig. 4, a vertical section of the machine; Fig. 5, a sectional plan on the line 1 2; Figs. 6, 7, and 8, views of the cutters used in the machine; Fig. 9, Sheet 2, a top view of the machine; Fig. 10, a vertical section, showing the cutters operating on the inside of the ring; Figs. 11 and 12, detached views of parts of the machine; Figs. 13 and 14, enlarged views of the cutters.

The frame of the machine consists of a substantial pillar, A, having a suitable base, *a*, and a table, B, secured to the top of the pillar. Within the pillar A is snugly fitted a movable frame, D, consisting in the present instance of a tube, which can be adjusted vertically in the pillar, but cannot turn in the same. The vertical spindle E has its bearing for its lower journal in the step *b*, which is adjustable in the lower end of the movable frame, the upper journal, *e*, of the spindle being in the form of a double frustum of a cone, confined to a bearing in the upper end of the movable frame by a follower, *d*, Fig. 4.

The pulley for receiving the driving-belt consists of a tube, F, secured to the spindle, the belt passing through a vertically-elongated slot, *f*, in the pillar A and through a similar slot, *f'*, in the movable tubular frame.

To the pillar are hinged two stops, *h h'*, each consisting of an arm carrying an adjustable set-screw, *i*, and through a vertical slot in the said pillar projects a lug, *j*, on the inner tubular frame, the lug being connected by a link, *j'*, to the foot-lever *k*.

As shown in Fig. 4, the movable frame is in its proper vertical position for the cutters to act on the inner edge of wooden rings, the inner frame being held in this position by the bearing of its lug *j* on the set-screw *i* of the upper hinged stop, *h*, and a set-screw, *m*, passing through a permanent lug, *n*, on the pillar A, serving to hold down the movable frame by bearing on its lug *j*.

Under the circumstances explained hereinafter it becomes necessary to lower the movable frame to the extent determined by either of the two stops, and this the operator does by first applying his foot to the outer arm of the foot-lever, then moving one or the other of the hinged stops to one side, and then permitting the movable frame to descend until its lug *j* rests on the set-screw of the stop which has not been moved to one side.

On the top of the table are two undercut guides, *m m'*, for movable plates or slides G G'.

A stud, H, Figs. 4 and 10, is secured to a ring, H', having beveled edges adapted to a circular opening with corresponding edges in the plate or slide G, so that the stud and its ring can be turned freely in the plate by a handle, *p*, but can have no other movement independently of the said plate.

A washer, I, is secured to the top of the stud H, and between the washer and an upper washer, I', is clamped the crude wooden ring shown in Fig. 1 by a bolt, J, and handled nut, J'. The washer I' is slotted, as shown in the top view, Fig. 9, so that, after loosening the handled nut, the disk may be withdrawn and the wooden ring removed.

As shown in Fig. 10, the rotary cutter is in the act of rounding off the outer edge of the ring, the stud H with its clamp being turned in one direction or the other, as the grain of the wood may suggest, a smooth cut being made in some parts of the ring by turning it in one direction, and in other parts of the ring by turning it in the other direction, as will be readily understood by those familiar with the operation of rotary cutters on wood.

The handle p is hinged to a loose ring, p', on the stud H, and, by pressing down the handle, a projection, q, on the latter is caused to catch in teeth formed on the lower portion of the stud, so that, on turning the handle laterally, it will carry the stud round with it, but on raising the handle the latter will be free to turn laterally on the stud. Hence it will be seen that by a proper manipulation of the said handle every part of the outer edge of the wooden ring may be presented to the rotary cutter.

As shown in Fig. 4, the inner edge of the wooden ring is about to be acted on by the rotary cutter, and is confined to a chuck, which I will proceed to describe. A ring, K, is secured to the beveled ring K′, which is adapted to an opening in the plate G, the said opening being beveled at the edge to correspond with the ring K′, so that both rings can turn together in the plate, but can have no other movement independently of the same.

The ring K is connected by arms S to a ring, S′, which is grasped by the operator in turning the said ring K. Four jaws, t, are carried by this ring K, each jaw having on its under side a T-shaped or dovetailed projection adapted to a radial groove of similar shape in the said ring, and each jaw is controlled by a curved rib, u, Fig. 12, on a ring, M, which bears on the plate G′ and fits to the exterior of the ring K′, but can be turned independently of the same by a handle, v.

On turning the ring M of this chuck in one direction the jaws will move radially and simultaneously and grasp the partially-finished ring, Fig. 2, the jaws being made at the end of a shape adapted to the rounded outer edge of the ring, and on turning the said ring M in a contrary direction the jaws will be moved outward simultaneously, and the wooden ring will be released.

As shown in Fig. 4, the partially-finished wooden ring has just been griped by the jaws of the chuck, the ring K being concentric with the cutter, so that the latter could not interfere with the placing of the ring between the jaws.

It should be understood, however, that in order to prevent accidents the frame D, and consequently the cutter, is lowered to an extent determined by the upper stop, h, before the wooden ring is adjusted to its place in the chuck.

By turning a shaft, N, having its bearings in the table B of the frame, a pinion, N′, on the said shaft, acting on the teeth of a rack beneath the plate G′, will move the latter in the direction of the arrow until an adjustable stud, w, on the end of the plate comes in contact with a spring-pin, y, in the table B, and this will bring the inner edge of the wooden ring to the cutter, when the operator, on turning the chuck by means of the handle v, can submit every part of the inner edge of the ring to the cutter, thereby completing the said ring, which can be removed from the jaws after the chuck, by moving the plate G′, has again been brought to the position shown in Fig. 4.

It should be understood that as many rings as are required are first finished externally and then internally.

When a lot of wooden rings have been completed by reducing them to the condition shown in Fig. 3, and it becomes necessary to operate on another lot of crude rings, the movable frame D is lowered to the extent determined by the lowest stop, h', when the nut which confines the cutters is below the surface of the table B, after which the spring-pin y and a similar pin, y', are depressed, so as to permit the plate G′ and its chuck to be moved forward out of the way, when the movable frame and its cutters can be raised to their original position, and the plate G, with its stud H and clamping device, brought to the position shown in Fig. 10.

The cutter-carrier consists of the spindle s and two cross-bars, T T′, confined to the spindle between a collar and a nut on the same, as shown in Fig. 6, the tapering portion of the said spindle fitting in a corresponding recess in the main spindle E.

Two cutters, x x', are confined between the cross-bars T T′, each cutter consisting of a steel plate curved in one direction to correspond with the desired rounded edges of the wooden rings and curved in the other direction to correspond with the path in which it rotates.

Figs. 13 and 14, Sheet 1, show these cutters on a larger scale and the mode of confining them, the upper and lower edges of each cutter being overlapped by projections t' on the two cross-bars, and each bar having projections fitting into notches w' in the cutter, so that the latter cannot be displaced as long as the nut at the top of the spindle is tight, nor can the shape of the cutter be altered by the pressure to which it is subjected by the nut, for the cross-bars are made to conform to the shape of the cutters.

I claim as my invention—

1. In a machine for rounding the edges of wooden rings, the combination of a rotary cutter with two movable plates or slides, one having a device for clamping the ring near its inner edge, and the other a chuck for clamping a ring at its outer edge, all substantially as and for the purpose set forth.

2. The combination of the rotary cutter and mechanism for raising and lowering the same with two slides, each carrying a clamping device, substantially as specified.

3. The combination, with the rotary cutter, of the ring K, adapted to the slide G′, the jaws t, carried by and adjustable radially on the said ring, and the ring M for controlling the jaws, all substantially as set forth.

4. The combination of the slide G, the stud H, carried by and arranged to turn in the slide, the clamping-washers I I′, and the bolt J.

5. The combination of the stud H, the loose ring on the same, and the handle *p*, hinged to the ring, and having a projection, *q*, adapted to teeth on the stud, all substantially as set forth.

6. The combination of the pillar A, the inner spindle-carrying frame, D, and its lug *j*, passing through a slot in the said pillar, with the foot-lever *k* and link *j'*.

7. The combination of the pillar A and its hinged stop or stops with the inner movable frame, D, and its lug *j*.

8. The within-described cutter-head, consisting of cutters *x x'*, each curved in two directions, and notched at *w*, as described, and the cross-bars T T', adapted to the curvatures of the cutters and to the notches in the same, all being combined substantially as set forth.

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

JOHN G. BAKER.

Witnesses:
WM. COOPER,
HARRY SMITH.