

J. J. C. SMITH.
Apparatus for Bunching Bristles.

No. 223,399.

Patented Jan. 6, 1880.

Fig. 2,

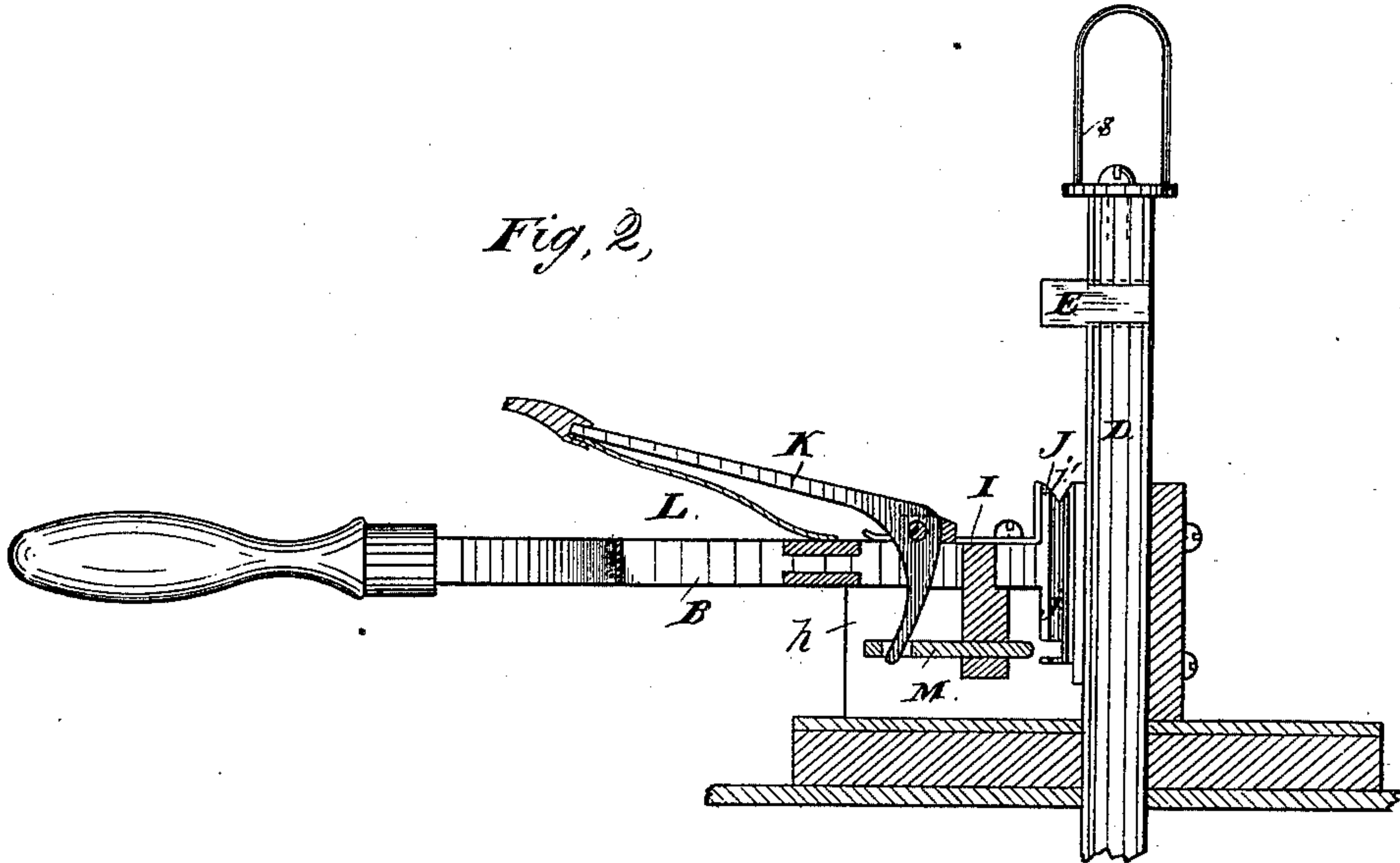


Fig. 4,

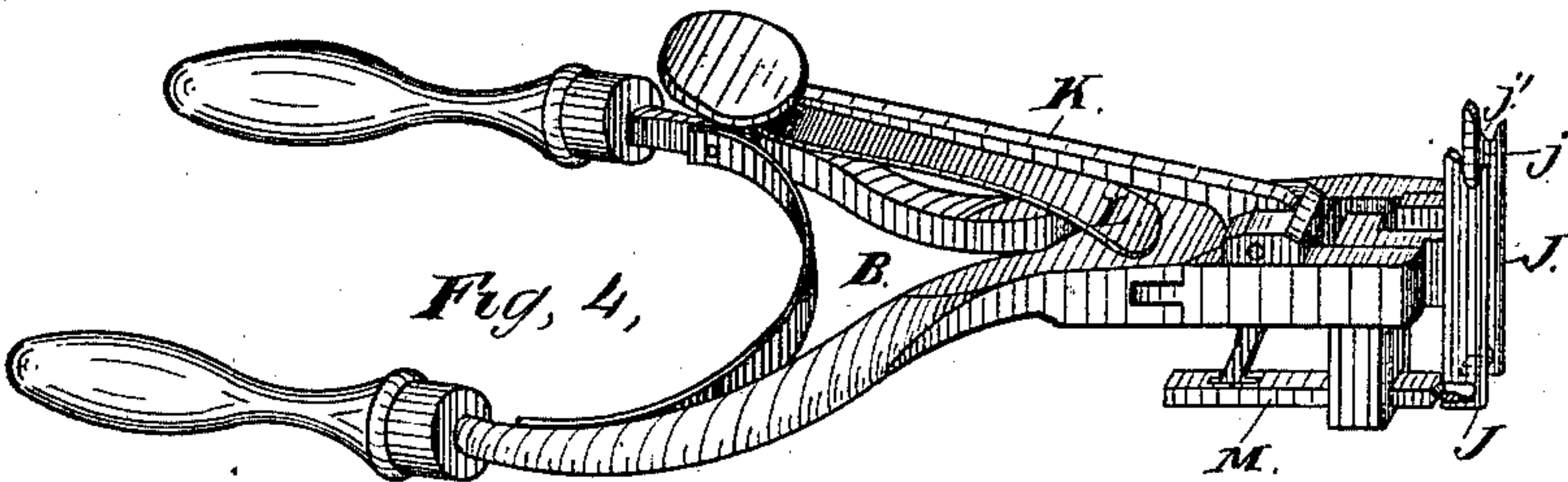
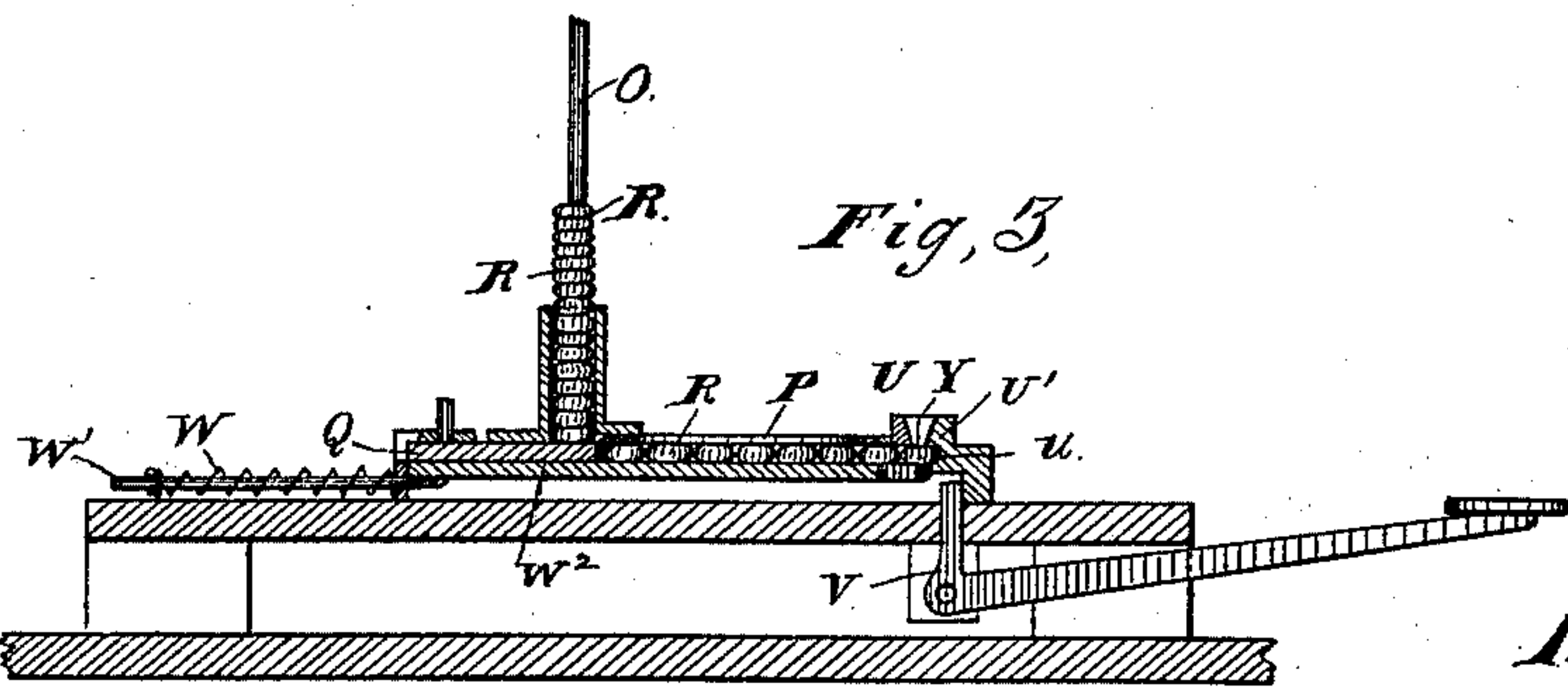


Fig. 3,



Inventor:

John J. C. Smith.

By Knight & Co.
attys.

Attest:
Geo. T. Smallwood,
Walter Allen

UNITED STATES PATENT OFFICE.

JOHN J. C. SMITH, OF COLLEGE POINT, NEW YORK.

APPARATUS FOR BUNCHING BRISTLES.

SPECIFICATION forming part of Letters Patent No. 223,399, dated January 6, 1880.

Application filed February 15, 1879.

To all whom it may concern :

Be it known that I, JOHN JOSEPH CHARLES SMITH, of College Point, in the county of Queens and State of New York, have invented
5 a new and useful Apparatus for Bunching Bristles for the Manufacture of Brushes, of which the following is a specification.

The invention consists in the combination of three separate apparatus, by means of which
10 a bunch or certain number of bristles can be bent or doubled up, as is done in the ordinary way of making brushes, and the bunches thus doubled up may be inserted in the holes made in the brush-handle to receive them.

15 Apparatus A and C are fixtures mounted in convenient proximity on a suitable table or tables. Apparatus B is a tongs-like implement for transferring the bristles from one to the other in the course of bunching, as herein-
20 after described.

Apparatus A has the function of bending the bristles and drawing them into a receiving-socket in the transfer-tongs, which I denominate "apparatus B." Apparatus C is for the
25 purpose of readily placing a small ring, made of $\frac{1}{8}$ wire, on the end of the bristle bunch, where it is doubled up. This little wire ring is put on the bristle bunch while it is held in the transfer-tongs, and serves the purpose of holding
30 the bristles together at the bent end and preventing their sprawling out, which would prevent the bunch from readily entering the hole in the brush handle or body.

Apparatus A is provided with a vertically-
35 sliding bar, which has a thin cross arm or blade, serving the purpose of bending the bunch of bristles when the bar is moved downward. The sliding bar is moved up by the force of a spring, which may be attached to
40 the ceiling above, and is brought down in action by a treadle attached at the lower end of the bar.

In front of the sliding bar is a horizontal transverse V-shaped groove, from which, op-
45 posite the center of the bar, a deep notch extends downward, and some distance below horizontal guides project forward, for the reception of apparatus B, which consists of a pair of suitable tongs kept open by a spring
50 at the handles. At the mouth are two cross-bars, which, when closed, have a small open-

ing or socket in the center. At the lower side of the tongs is a movable bar, which is operated by means of a spring and thumb-lever.

Apparatus C consists in part of a movable
55 jaw, in the center of which, when closed, is a funnel-shaped hole or cavity. The funnel-shaped cavity is connected with a small channel or groove, which ends in a small vertical
60 tube.

In the rear of the channel, crossing below
65 the vertical tube, is a small slide, which draws back when the jaw in front is opened by a depression of the lever. From an upright galleys-shaped bar a wire is suspended, which
70 reaches into the vertical tube, extending to the bottom and slightly touching the small slide. On this suspended wire a number of the small wire rings are strung, so that they may be guided in the tube. As soon as the
75 jaw is opened by a depression of the lever the small slide draws backward out from under the tube, thereby giving room for one of the small rings to drop from the wire into the horizontal channel below. When the lever is
80 released the movable jaw will close against the stationary one, and the small slide will move forward, pushing the small ring forward in the horizontal channel. This operation repeated will drop another ring in the channel,
85 which is pushed also forward, following the first ring. Finally, the channel will be filled with rings, and the first one will reach the jaws, locating itself in a small recess of the jaw. Then the hole in the ring will be in corre-
90 spondence with the funnel-shaped cavity, so to say, at the bottom of the funnel. Apparatus C may now be said to be charged with rings, so as to commence bunching bristles.

In order that the invention may be fully un-
95 derstood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of the com-
100 bined apparatus. Fig. 1^a is a perspective view of the principal moving parts of apparatus C, omitting the cover-plate marked P in Fig. 1. Fig. 2 is a vertical section on the line 2 2, Fig. 1. Fig. 3 is a vertical section on the line 3 3, Fig. 1. Fig. 4 is a per-

Apparatus A consists of a vertical bar, D, carrying a blade, E, sliding in a stationary block or stock, F, on the upper surface of which is formed a V-shaped groove, G. T is a treadle for drawing down the bar D, and S a spring connected to the upper end of the bar by a rod, cord, or chain, s, for the purpose of drawing up said bar when released by the foot.

In the face of the stock F are a guide, H, and recess h, surmounted by a spring, I, and formed to receive and rigidly hold the tongs B, the points of which carry cross-bars J, which have grooves j on their inner faces, so as to form a socket or channel between them, and notches j' at their upper ends to form a part of the V-shaped groove G when the tongs are in the position shown in Fig. 1 for the reception of the bunch of bristles.

K is a thumb-lever on the tongs B, pressed upward by a spring, L, and having a rigid elbow. The vertical arm of said elbow connects with a sliding rod, M, adapted to enter a recess formed for it near the lower end of the vertical cross-bars J of the tongs, so as to gripe the bunch within the socket or channels thereof, as described.

In apparatus C, N represents the gallows-shaped standard O, the wire or rod hung from the horizontal arm thereof by means of a cross-wire, o. R R represent rings upon the wire or rod O. P is the channel in the bed of the apparatus to receive said rings as they are delivered successively from the rod O. Q is a reciprocating slide, by which the rings are forwarded in succession to the seat u in the jaws U U'. Motion is imparted to the moving jaw U' to open the jaws by means of an elbow-lever, V, and to close them by a spring, W, through the medium of a rod, W', and a sliding plate, W², attached to said jaw U'.

A rod, X, rigidly attached to the jaw U', and a lever, x, fulcrumed at its center x' and pivoted at its ends to the adjacent extremities of the rod X and slide Q, cause the said slide to move simultaneously with the jaw U', but in the opposite direction, so as to insert a fresh ring in the seat beneath the funnel-shaped opening each time the jaws are closed.

Operation: Take the tongs B in the left hand, place them in the proper place made for their reception in apparatus A, then pick up a bunch of about twelve or fifteen bristles between the first finger and thumb of the right hand, and lay them in the V-shaped groove G on apparatus A (continuing to hold the bunch with the fingers) so that the thin arm or blade E on the sliding bar D will strike in the middle of the bunch. By drawing the sliding bar D down by means of the treadle T the thin arm or blade E will be made to bend the bristles and draw them through the opening in the groove G into the hole in the tongs B so far that the bent end of the bunch will project at the bottom or lower end of the jaws of the tongs about one-fourth of an inch. When the bristle

bunch is drawn into the tongs the jaws thereof must be kept closed while the tongs are withdrawn containing the bunch of bristles.

The next operation is to provide the bunch of bristles with a small ring at the folded end of the bunch, which projects at the lower end of the mouth of the tongs. To effect this the small sliding bar M at the lower side of the tongs is pressed against the bunch by depressing the lever K on the top with the thumb. The sliding bar on the tongs holds the bunch firmly and prevents its being pushed back in the tongs in the act of inserting its doubled end in the ring. The ring is readily put on the end of the bunch by the aid of apparatus C. While the bunch is firmly held in the tongs the projecting end is inserted in the funnel-shaped hole of apparatus C, which holds a ring in its jaws. A slight pressure on the tongs will push the folded extremity of the brush through the ring. To release the bunch and ring the jaws of the apparatus are opened by depressing the lever V with the right hand, when the tongs, still firmly holding the bunch, may be withdrawn. The bunch is now ready to be transferred to the brush-handle. The holes in the brush-handle must be a little countersunk, which admits of the ready insertion of the doubled end of the bunch, which is pressed into the hole while still held with the tongs. As soon as the bunch is properly planted in the brush-handle the gripe of the hand is released and the tongs withdrawn for repetition of the same operation.

The rings on the respective bunches lie close on the face of the brush-handle, and are pushed up about half-way on the bunch as soon as a row of bunches or tufts is set. This operation is done by a small fork with two short prongs.

The object of placing a small ring on every bunch is twofold: first, it keeps the doubled end of the bunch close together, which admits of pushing the bunch snugly into the holes of the handle; second, after pushing the ring half-way up it holds the bristles together in a straight position until the several bunches or tufts are cemented in the handle. The rings remain on the tufts until the cement has attained a certain degree of hardness, when the several rings are removed by combing them off the bunches.

The tongs must be held and operated with the left hand, holding the handles in the hollow palm of the hand and the fingers (the thumb on top) ready to operate the lever for moving the slide. Experience has proved this the best manner of operation, the right hand being more apt in picking up the bunches and holding them until drawn into the tongs.

By means of these three apparatus a girl will learn in a few days to set a brush with tufts as quickly and much more neatly than an experienced and skilled brush-maker can perform the work by hand.

Having thus described my invention, the following is what I claim as new and desire to secure by Letters Patent:

1. The bristle-folding apparatus A, consisting of a bed-block, F, having a horizontal groove, G, to receive the bristles, a vertically-sliding bar, D, guided in said bed-block, an operating-treadle, T, and an arm or blade, E, projecting horizontally forward from the face of the bar D, as shown, so as to fold the bunch of bristles and carry it down into a vertical notch which intersects the groove G.

2. The tongs B, constructed with cross-bars J J, grooved on their inner faces to form, when closed, an opening to receive the doubled bunch of bristles, as explained.

3. The thumb-lever K and slide M, operating, in connection with the tongs B, to gripe the doubled bunch of bristles, as explained.

4. The funnel-shaped jaws U U', operating in combination with a suitable ring-feeding device, N O Q, substantially as and for the purposes set forth.

J. J. C. SMITH.

Witnesses:

CHAS. H. G. METZGER,
F. MARTENS.