T. JESSON & T. DUGGAN.

BRUSH-MAKING MACHINES.

No. 195,017. Patented Sept. 11, 1877.

Fig: 1.

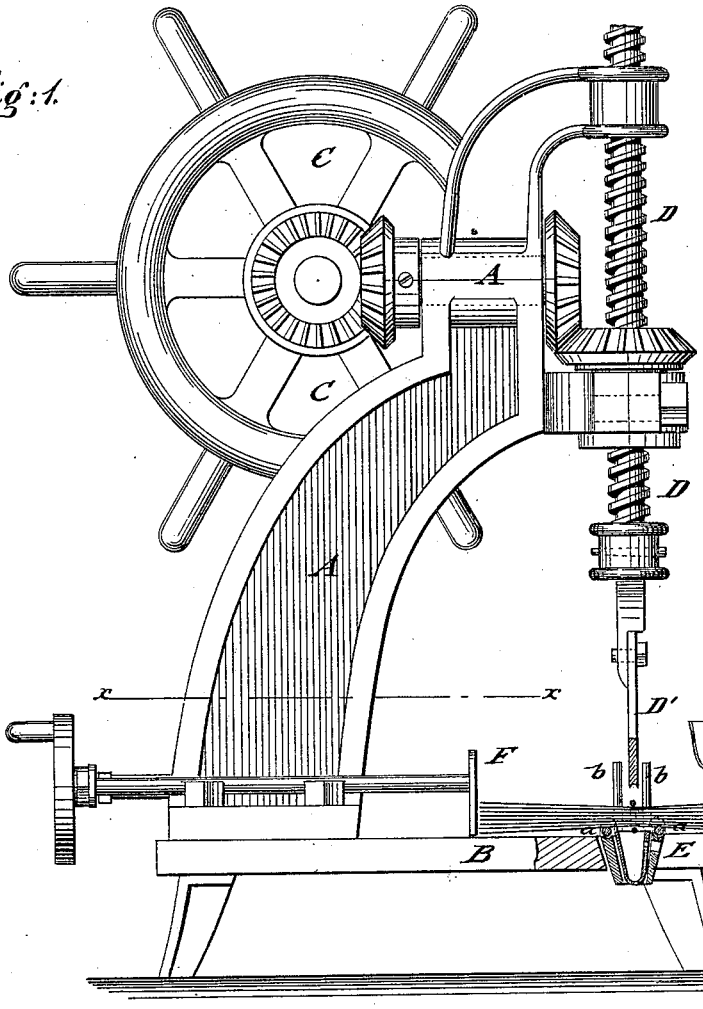

Fig: 3.

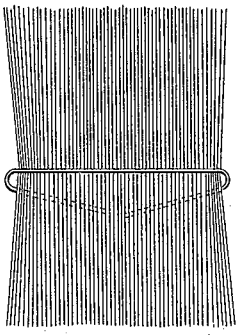

Fig: 4.

Fig: 5.

Fig: 6.

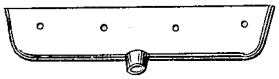

Fig: 7.

Fig: 2.

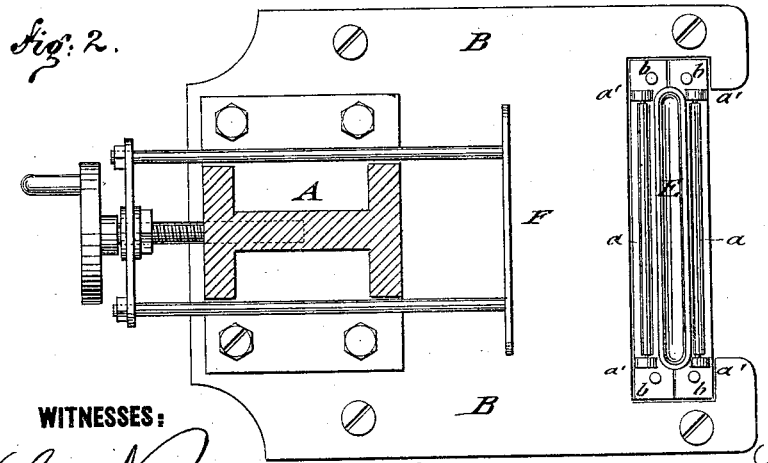

Fig: 8.

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UNITED STATES PATENT OFFICE.

THOMAS JESSON, OF GALWAY, AND THOMAS DUGGAN, OF GLASNEVIN IRELAND.

IMPROVEMENT IN BRUSH-MAKING MACHINES.

Specification forming part of Letters Patent No. **195,017**, dated September 11, 1877; application filed April 23, 1877.

To all whom it may concern:

Be it known that we, THOMAS JESSON, of Galway, county Galway, and THOMAS DUGGAN, of Glasnevin, county of Dublin, in Ireland, have invented a new and useful Machine for Making Brushes, of which the following is a specification:

Our said invention relates to an improved apparatus or machine for manufacturing brooms and brushes, whereby such manufacture may be carried on by more effectual, expeditious, and economical means than heretofore employed, and brushes of superior description, strength, and durability produced.

To accomplish these objects we make the head or brush-stock concave, or of any other convenient shape which may be found suitable for the class of brush to be produced. Said head or brush-stock may be made of galvanized, tinned, bronzed, or lacquered iron, bone, ivory, or other suitable material, singly or combined. This brush-head is placed into a closely-fitting hollow box or casing, which may be called a portable metal box, and which is set into a recess at the front of a metal table or bench, in such a manner that parallel side rollers on the upper edge of the box will be almost flush with the upper surface of said table or bench. On these rollers the bristles or other material necessary for the main feature of a brush are placed transversely, the material being either divided into layers by a pad of waste cloth or felt between each layer, when the brush is to appear in longitudinal rows, or placed solid on the rollers, as may be required; and then, across the center of the material, and in line with the brush head or stock underneath, is arranged an iron rod or wire of about double the length of the brush to be made, the free ends of which are turned down and under the material into the underlying brush-stock. The iron wire or rod is caught by a descending plunger, with grooved edge fitting over the wire, and forced, together with the partially-embraced material, by suitable pressure, down into the stock. The pressure of the flange causes the free ends of the iron wire to double over underneath the material, grasping it tightly, and being firmly retained by the bottom or back of the stock.

By reference to the accompanying drawings, which fully illustrate our invention, Figure 1 represents a side elevation of our improved brush-making machine; Fig. 2, a plan view of the same, partly in section, on line *x x*, Fig. 1; Fig. 3, a detail top view of the material used for the brushes, with the binding-wire shown as applied thereto. Figs. 4 and 5 show a different mode of attachment of the binding-wire to the brush head or stock. Fig. 6 is a side view of the brush head or stock; Fig. 7, a vertical transverse section of the same; and Fig. 8, a vertical longitudinal section of the portable box or casing for the brush-head, detached from the table.

Similar letters of reference indicate corresponding parts.

A represents the arm or standard of an improved brush-making machine, which is secured to the bench or table B, supported on suitable legs.

C is a hand-wheel that imparts, by a train of bevel-wheels, an ascending or descending motion to a vertical screw rod or shaft, D, which is guided in suitable socket-bearings of standard A. To the lower end of this vertical screw-shaft is securely attached the plunger D′, which may be flat, as shown in the drawing, when employed in the manufacture of straight brushes, or curved laterally, as may be required in the case of curved brushes of any fancy shape, such as crumb or other similar brushes.

For the purpose of making paint-brushes or other round, oval, and similar brushes, the flat or curved plunger is removed from the screw-shaft, and, instead, a plunger having a series of rods corresponding to the number and shape of the brushes attached thereto. The metal table or bench B is provided below the plunger with a socket-recess, near the front of the bench, into which the portable box E, for the brush heads or stocks, is placed. The box is constructed to receive tightly the brush head or stock, and provided at the longitudinal sides with parallel rollers *a*, that turn in suitable bearings *a′* at the ends of the

box, and serve for the purpose of facilitating the bending down of the bristles, fibers, or hairs when being driven into the stock by the plunger. At both ends of the box are vertical pins *b*, that confine the material within its proper limits.

The portable box is made of two longitudinal sections, which are connected and held fast by transverse thumb-screws, and may be further provided with a hinged drop-bottom for open-headed stocks, the drop-bottom being seated by lips or projections in the lower parts of the box, for the purpose of opening and dividing, and facilitating thereby the removal of the finished brush from the box.

In the manufacture of plasterers' and similar brushes, simple oblong bands of metal or other material are used in place of the head or stock, and dropped into the portable box, whose drop-bottom fits, by a detachable plate of less width, into the lower part of the band or stock, and prevents thereby the material from being driven down too far, so as to preserve the necessary space that is subsequently to be occupied by the handle.

Side apertures of the box serve for the passage of transverse pins or rivets, when it is necessary to further secure the material, as in the case of heavy brushes.

The portable box has to be constructed of various sizes and different shapes, according to the patterns or varieties of brushes to be manufactured, whether straight, curved, or otherwise, so as to correspond with the shape of the plunger, as heretofore described.

For the purpose of measuring the length of the material employed in the manufacture of the brushes, an adjustable gage, F, is arranged parallel to the box E, the gage being guided sidewise of standard A, and adjusted on a center-screw by a cross-piece and jack-nuts, as shown in Fig. 2.

In Fig. 3 the layer of the material is shown with the iron binding-wire laid across its upper surface, the free ends being turned down under the hairs, as indicated by the dotted lines. This layer is then ready to be laid on the parallel rollers, and forced into its respective stock by the plunger, as shown in Fig. 1.

For the manufacture of the common paint or other brushes, of round, oval, or square shape, a box of conical shape is employed, the same having a number of apertures or sockets, of the size and shape of the brushes to be made, which box takes the place of, but is made on the same principle as, the portable box E.

Into the sockets of the case are placed the handles, which have first been driven through the conical case or ferrule of the brush, with tapering end foremost, until the thick end of the handle is caught and firmly held in the narrow end of the case or ferrule. These cases or ferrules are seated in the box, flush with the upper surface of the same, and then a bound or tied tuft of material, that is cemented in the ordinary way, inserted into the unoccupied space of said brush-case. Into the center of each tuft or knot of hair is then inserted a conical pin, of hard wood or other material, and, finally, all the pins or keys forced down simultaneously into the brushes by the pressure of the forked plunger referred to, until the pins or wedges enter the butt-ends of the handles, and secure the tuft or knob firmly into the cases.

A rivet may be passed afterward through the case transversely, if required, for additional strength.

It will be obvious that the number of these sockets may be increased, and that a plunger with a corresponding number of vertical forks or rods has to be used in connection therewith.

It will also be evident that, according to our invention, two or more rows of sockets may be employed, by placing them in longitudinal lines parallel to each other, in which case a similar number of rows of vertical plunger forks or rods has to be used.

In the employment of Russia or other hair or whisk, the quantity for each brush is divided into two or more equal parts, and the roots or thicker ends of one portion or layer placed on the roots or thicker ends of the other layer, in order to have the finer or flag ends uppermost. On the overlapping portion the binding-wire is placed, and the roots or thicker ends are then forced with the wire into the brush head or stock, as before described.

The principle herein described may be extended to the manufacture of all varieties and classes of brushes, twigs, and brooms, the important feature of which is that the whole of the material to be used in the manufacture of each brush, upon being arranged in position in the manner herein described, may be driven into the intended head or stock, by a single operation of the machine, in a secure and permanent manner.

We do not confine ourselves to the precise details and arrangements of the operative parts as herein described and set forth, as the same may be varied without departing from the principle and peculiar character of our invention.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

The combination of the socketed table B, the plunger D′, and the box E, the latter having rolls *a* and pins *b*, as and for the purpose specified.

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Witnesses:
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PATK. LYNSKEY,
Writing Clerk, Galway.