No. 701,386. Patented June 3, 1902.

T. A. PERRINS.

MACHINE FOR JAPANNING SMALL ARTICLES.

(Application filed Sept. 11, 1901.)

(No Model.) 2 Sheets—Sheet 1.

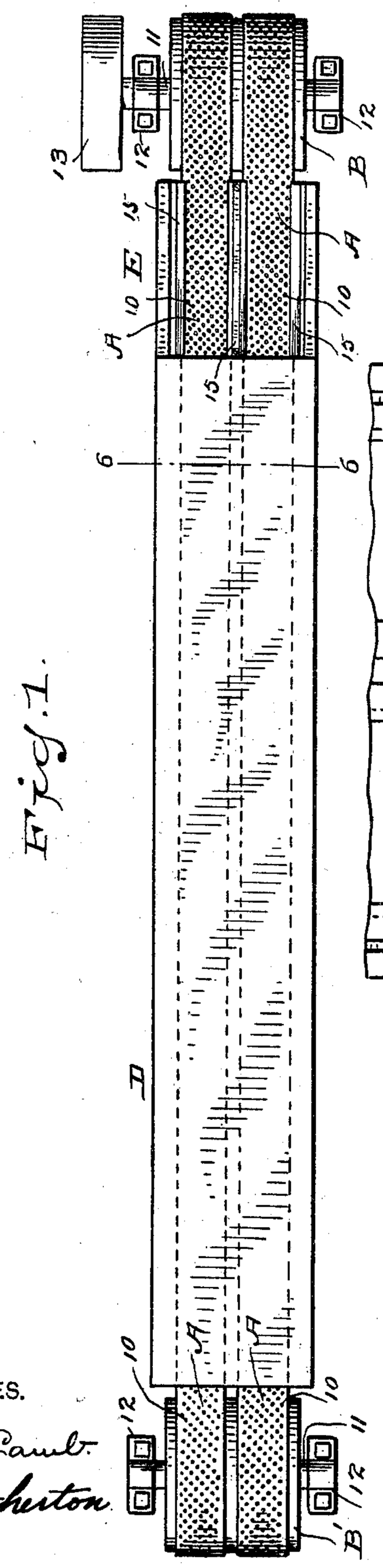

Fig. 1.

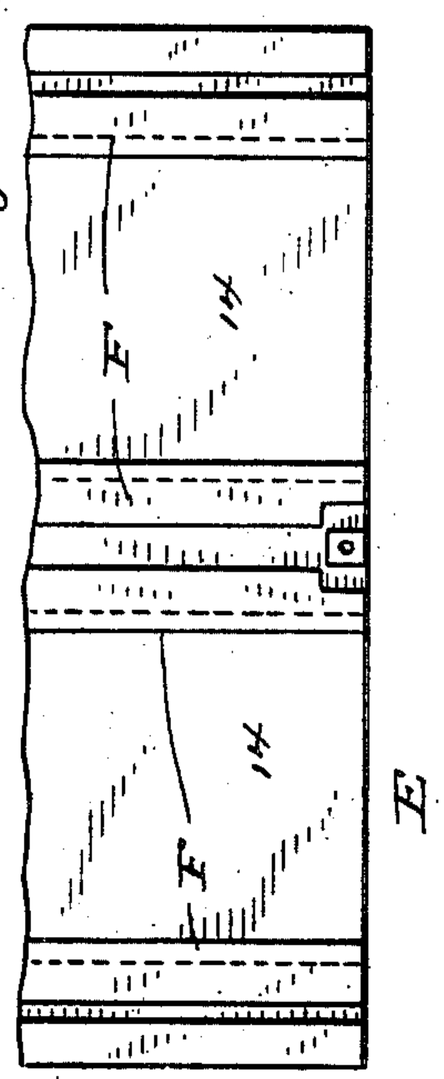

Fig. 3.

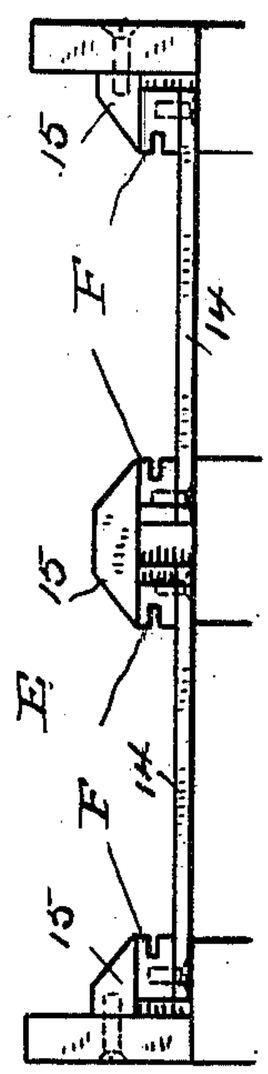

Fig. 4.

WITNESSES.

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Fig. 2.

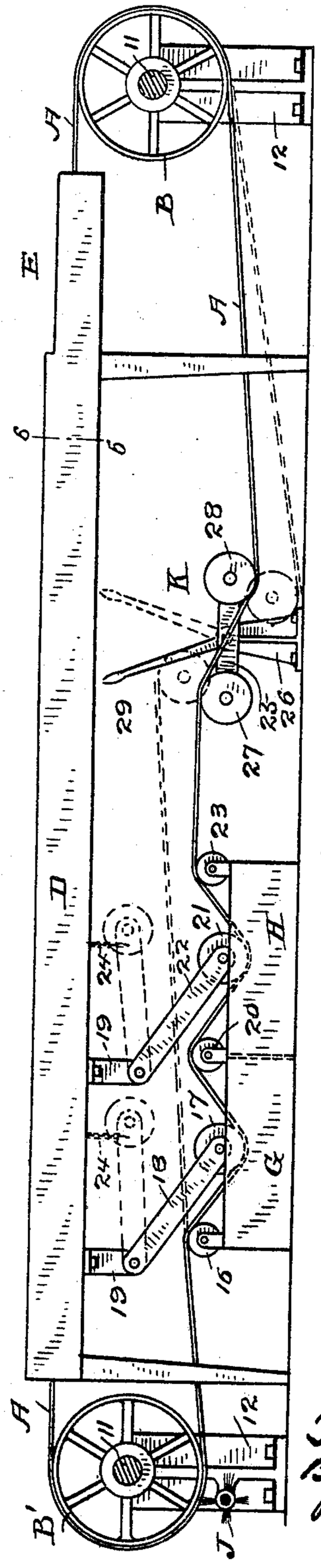
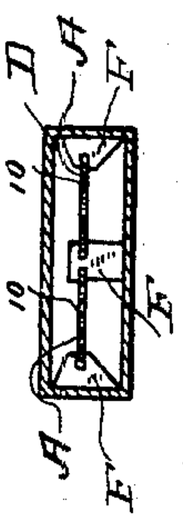


Fig. 5.

Fig. 6.



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MACHINE FOR JAPANNING SMALL ARTICLES.

SPECIFICATION forming part of Letters Patent No. 701,386, dated June 3, 1902.

Application filed September 11, 1901. Serial No. 75,020. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. PERRINS, a citizen of the United States, residing at Seymour, county of New Haven, State of Connecticut, have invented a new and useful Machine for Japanning Small Articles, of which the following is a specification.

My invention has for its object to provide a continuously-operating machine for japanning small articles which shall be simple and inexpensive to build and to run, will bake the japan upon the articles while they are moving in the machine, will be self-acting to eject the japanned articles from the machine, and will be practically self-cleaning while in use.

With these ends in view I have devised a japanning-machine the essential feature of which is a continuously-moving perforated metal belt acting in connection with a baking-oven.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of my novel machine complete; Fig. 2, a side elevation, the standards toward the point of view being removed and the shafts in section; Fig. 3, an enlarged plan view of the outer end of the filling-space; Fig. 4, an end elevation of the filling-space; Fig. 5, a longitudinal section, on a greatly-enlarged scale, of a piece of the perforated metal belt, showing articles carried thereby, as while being japanned; and Fig. 6 is a section of the baking-oven on the line 6 6 in Fig. 1.

A denotes an endless metallic belt or belts having holes or perforations 10 to adapt it to receive small articles, as eyelets; B B′, pulleys over which the belt or belts run; D, a baking-oven through which the belts pass; E, a filling-space; F, guides for the edges of the belt or belts, which also act as guards to prevent the articles to be japanned from getting under the belt; G, a chemical-tank; H, a water-tank; J, a rotary brush, and K an oscillating belt-tightener.

In the drawings I have shown the machine as provided with two belts and the corresponding guides. It will be obvious, however, that the matter of whether one or two belts are used and various other changes in the details of construction and arrangement of the parts are not of the essence of my invention and may be left entirely to the judgment of the builder, as it is obvious that various changes in the details of construction are liable to be required in machines constructed for the japanning of special articles. In the present instance I have illustrated a machine for japanning eyelets and have shown the belt as provided with round holes adapted to receive eyelets, studs, and similar articles. The pulleys B B′, over which the belts run, are carried by shafts 11, journaled in standards 12, one of said shafts being provided with a belt-pulley 13 and power to drive the perforated metal belt being applied by means of a belt (not shown) passing over said belt-pulley. In the present instance I have shown pulley B′ as a driven pulley and placed on the far side of the oven, the belt passing downward over said pulley, so that articles carried by the belt will be ejected, as will be more fully explained.

The baking-oven may be heated by means of steam, the direct action of fire, or in any way that may be most convenient or is preferred, an essential requirement of the machine being that a suitable baking-oven be provided, but the special construction and operation of the oven being wholly unimportant so far as the principle of my invention is concerned.

I have used the term "filling-space" to designate the portion of the upper side of the belt that is not within the oven. In the construction illustrated in the drawings, and which I have had in use for some time, the belt is supported by the guides at the edges only. One or two operators, depending upon the width of the metal belt or belts, stand at the filling-space, place eyelets upon the metal belt, and by means of the hands, a brush, or any suitable tool seat them in holes 10, and then by means of a brush paint or cover over the tops and the inner sides of the eyelets with japan, it being understood, of course, that the metal belt is constantly moving at a rate of speed that must be dependent upon various conditions—for example, the size of the articles to be japanned, the quality of the japan, and the temperature of the oven—it being contemplated that the articles carried

by the belt pass through the oven slowly enough so that they will be baked and the japan hardened while passing through. As a means of ejecting the japanned eyelets from the machine I merely utilize the second pulley over which the metal belt passes—for example, the pulley which I have indicated in Figs. 1 and 2 by B′—it being understood, of course, that the ejecting-pulley is the pulley at the opposite end of the machine from the filling-space. The action of the ejecting-pulley as the metal belt curves about it is to loosen the eyelets carried in the holes therein and cause them to drop out as the belt passes under the pulley. In order to insure, however, that all of the japanned eyelets shall be removed from the belt, I provide the rotary brush J, which rotates in the opposite direction from that in which the belt is moving. This brush may be made of wire, stiff bristles, or any suitable material. I have not illustrated mechanism for imparting rotary motion to the brush, as it is obvious that it may be driven in any suitable manner. The guides are placed at just sufficient distance apart to permit the belt to travel therein freely but snugly, it being important, of course, to avoid unnecessary friction upon the belt, but necessary to prevent eyelets from getting under the belts or dropping down at either side thereof. In order to provide, however, for slight lateral movement of the belts in use, I provide for movement of the guides themselves. It will be noted (see Fig. 4) that each pair of guides is connected by a cross-piece 14, the guides facing each other and being attached to the ends of the cross-pieces. These pairs of guides are retained in place by blocks 15, which are themselves secured in place in any suitable manner. I preferably, as shown in Fig. 6, provide guides within the oven to keep the belt or belts from vibrating and to keep them in line. After removing the japanned eyelets or other articles from the belt I clean the belt by passing it first through the chemical-tank G and then washing it in the water-tank H. I have shown the metal belt as passing first over a pulley 16 at the edge of tank G, then under a pulley 17, carried by a lever 18, whose other end is pivoted to a bracket 19, which is itself secured to the under side of the oven or to any suitable portion of the machine. This pulley 17 carries the belt down into the chemical-tank, which is supplied with a strong solution of caustic potash or any similar cleansing solution. The belt then passes over a pulley 20, secured to the edge of water-tank H, then under a pulley 21, carried by a lever 22, which is shown as pivoted to another bracket 19, secured to the under side of the oven. Pulley 20 acts to immerse the metal belt in tank H, which is ordinarily supplied with water kept hot by steam or in any suitable manner. After leaving tank H the belt is shown as passing over a pulley 23. Levers 18 and 22 and the pulleys carried thereby may be swung upward and locked out of operative position by any suitable retaining devices, as chains 24. In order to keep the metal belts sufficiently taut for use, I provide the oscillatory tightener K, consisting of a lever 25, pivoted to a standard 26 and carrying at one end a roller or rollers 27, over which the belt or belts pass, and at the other end a roller or rollers 28, under which the belt or belts pass, as clearly shown in Fig. 2.

29 denotes a hand-lever secured to lever 25, by which it may be manipulated in use.

Having thus described my invention, I claim—

1. A machine for japanning small articles, comprising a baking-oven, an endless metal belt passing through the oven and having perforations corresponding to the shape of portions of the articles to be treated, and means for imparting movement to the belt, a space being provided at the entrance of the oven for filling the perforations with said articles.

2. A machine for japanning small articles, comprising a baking-oven, an endless metal belt passing through the oven and having perforations corresponding to the shape of portions of the articles to be treated, means for imparting movement to the belt, a space being provided at the entrance of the oven for filling the perforations with said articles, and a support for the belt while being filled.

3. A machine for japanning small articles, comprising a baking-oven, an endless metal belt passing through the oven and having perforations corresponding to the shape of portions of the articles being treated, pulleys over which the belt passes, one of said pulleys being located at a distance from the entrance end of the oven to afford a space for filling the perforations of the belt with the articles, and a support for the belt between the said entrance end of the oven and the pulley.

4. A machine for japanning small articles, comprising a baking-oven, an endless metal belt passing through the oven and having perforations corresponding to the shape of portions of the articles being treated, pulleys over which the belt passes, one of said pulleys being at a distance from the entrance end of the oven to afford a space for filling the perforations of the belt with the articles, and the other pulley serving as means for partially ejecting the articles from the perforations after leaving the oven.

5. A machine for japanning small articles, comprising a baking-oven, an endless metal belt passing through the oven and having perforations corresponding to the shape of portions of the articles being treated, pulleys over which the belt passes, one of said pulleys being at a distance from the entrance end of the oven to afford a space for filling the perforations of the belt with the articles, and the other pulley serving as means for partially ejecting the articles from the perforations after leaving the oven, and a rotary brush

adjacent to the under side of the last-mentioned pulley to dislodge the articles which have been partially ejected.

6. A machine for japanning small articles, comprising a baking-oven, an endless metal belt passing through the oven and having perforations corresponding to the shape of portions of the articles to be treated, means for imparting movement to the belt, a space being provided at the entrance of the oven for filling the perforations with said articles, means for supporting the belt while being filled, and means within the oven for guiding and supporting the edges of the belt.

7. A machine for japanning small articles, comprising a baking-oven, an endless metal belt passing through the oven and having perforations corresponding to the shape of portions of the articles to be treated, means for imparting movement to the belt, a belt-cleaning tank outside of the oven, and means for guiding the belt through said tank.

8. In a machine of the character described the combination with an endless perforated metal belt and means for driving the same, of guides in which the edges of the belt travel, cross-pieces 14 by which pairs of guides are connected, means for holding said guides in place while permitting lateral movement thereof and a baking-oven through which the belt passes.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS A. PERRINS.

Witnesses:
WILLIAM H. DECKER,
MARGARET O'KEEFE.