L. L. ALLEN.

Improvement in Machines for Enameling Cloth, Leather, &c.

No. 130,968. Patented Sep. 3, 1872.

Fig. 1

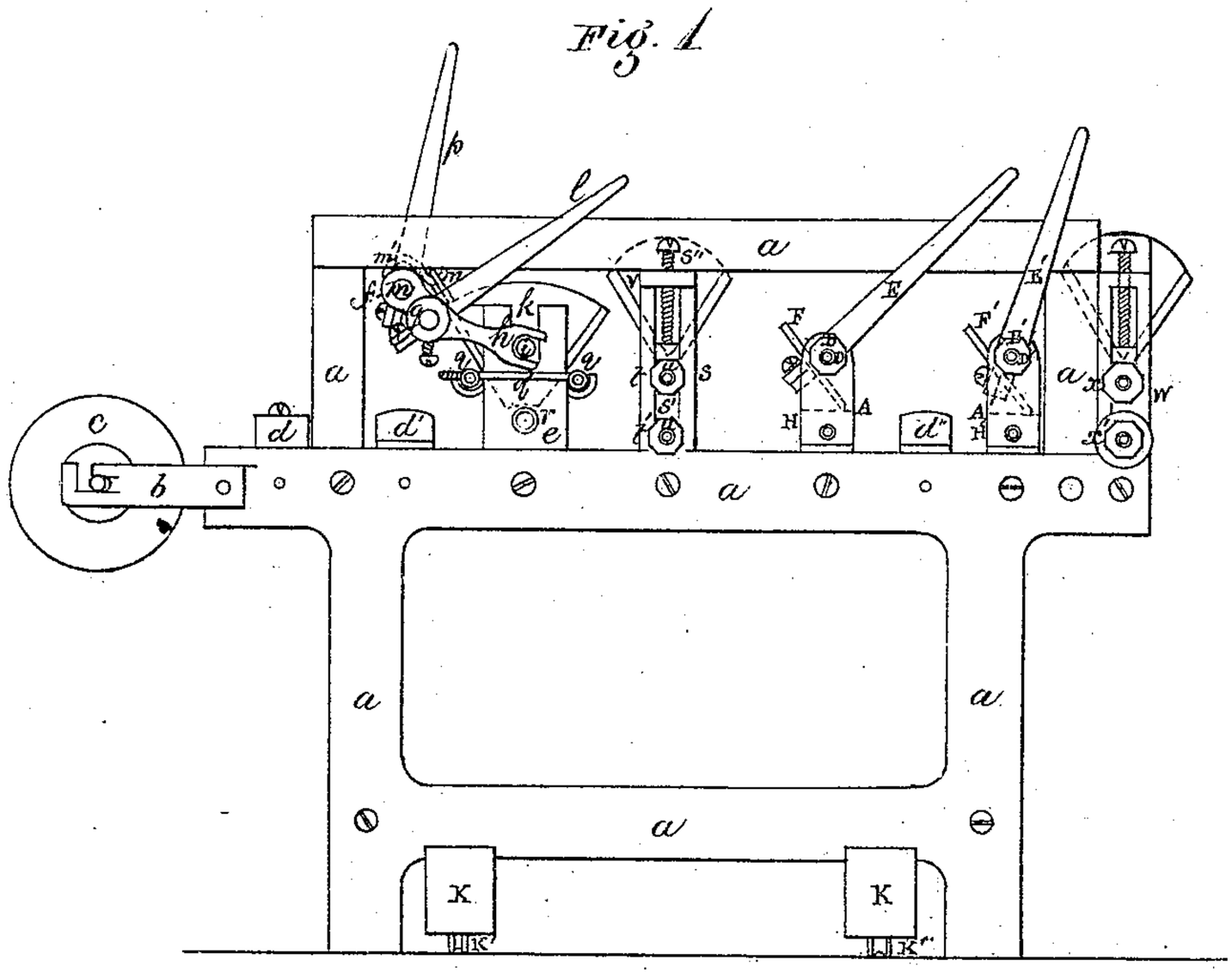

Fig. 3

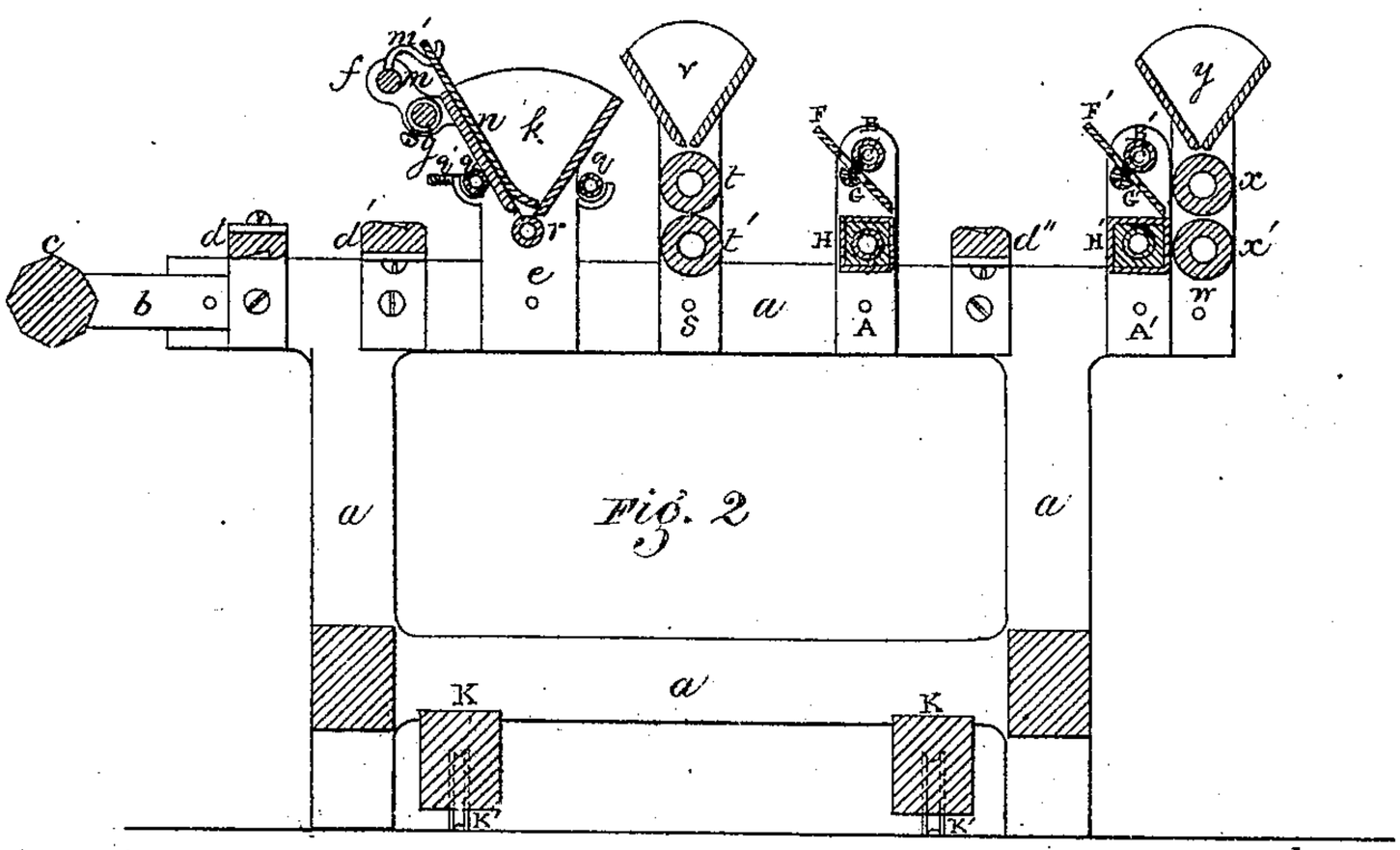

Fig. 2

Witnesses
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UNITED STATES PATENT OFFICE.

LUTHER L. ALLEN, OF HALLOWELL, MAINE, ASSIGNOR TO CHARLES E. CUMMINGS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR ENAMELING CLOTH, LEATHER, &c.

Specification forming part of Letters Patent No. 130,968, dated September 3, 1872.

SPECIFICATION.

I, LUTHER L. ALLEN, of Hallowell, in the county of Kennebec and State of Maine, have invented certain Improvements in Machine for Enameling Cloth, Leather, &c., of which the following is a specification:

Figure 1 of the accompanying drawing, is a view of one side, and Fig. 2 is a central vertical longitudinal section of my improved enameling and water-proofing machine. Fig. 3 is a top view of a portion of the machine.

The present invention relates to certain new and useful improvements in the manufacture of enameled leather, cloth, or other fabrics or material, and in covering cloth or other fabric, &c., with water-proof or other substance or compounds; and has for its principal object the spreading of the enameling or other substance or compound upon the cloth, leather, or other fabric or material by means of machinery acting automatically. My invention consists, mainly, of a machine for enameling, water-proofing, or otherwise covering cloth, leather, and other fabrics or material with suitable substances or compounds, provided with a series of mechanical devices arranged and operating, as will be hereinafter more fully explained, so as to produce an automatic action by which the cloth or other material to be enameled or water-proofed, &c., is fed along and covered with an evenly-laid surface of the enameling or other desired substance or compound.

In the drawing, *a* represents the frame of my machine, to one end of which, on each side, are affixed bearings *b*, in which revolve the ends of a beam or roll, *c*. Attached to each side of the frame *a*, and transversely across its top, are bars *d d' d''*, arranged as shown. The under surface of the bar *d* and the top surface of the bars *d' d''* are formed with grooves, teeth, or corrugations, arranged diagonally, those on one side of the bars being in an opposite oblique direction to those on the other side, as shown in Fig. 3. Forward of the bars *d* and *d'* are attached to the frame *a* standards *e e*, formed with curved arms *f f*, which form bearings for the support of the ends of a shaft, *g*, to which are affixed bifurcated arms *h*, that engage with trunnions *i*, connected with the ends of a hopper, *k*, that extends transversely across the frame *a*, and is raised or lowered by actuating the bifurcated arms *h* by means of a lever-arm, *l*, connected with the shaft *g*. The curved arms *f f* also form bearings for a rod, *m*, to which are attached, by bent rods or arms *m'*, a sliding gate, *n*, curved at the bottom, that is operated up and down so as to open or close an outlet formed in the bottom of the hopper *h*, and regulate the flow of the material deposited therein by means of a lever-arm, *p*, which actuates the rod *m*. Arranged on each side of the hopper *k* are steam-chambers *q q*, connected at the ends by pipes *q'*, formed with screw ends for the attachment of tubes for the admission of heat into the chambers *q* for the purpose of regulating the heat of the enameling or other mixture. Below the hopper is a transverse rod or bearing, *r*, provided with a steam-chamber, and supported by the standards *e*. In front of the hopper *k*, on each side of the frame *a*, are bearings *s s*, each formed with a slot, *s'*, in which travels up and down a block operated by a screw, *s''*, to regulate the height of two smooth rollers, *t t'*, placed one above the other, and formed with heating-chambers, the ends of the said rollers being supported in the bearings *s*, through which they extend, and are furnished with screw-pipes *u*, to which tubes may be attached for the admission of heat. Connected with the bearings *s*, above the rollers *t t'*, is a transverse receptacle or trough, *v*, to contain sponge or other suitable substance, saturated with water or other desired liquid, for the purpose of supplying the rollers *t t'* through a longitudinal aperture in its bottom with a constant moisture, so as to prevent the enameling or other mixture sticking to them. To the end of the frame *a*, on each side, are attached bearings *w w*, supporting smooth rollers *x x'*, provided with heating-chambers and screw-ends, and a receptacle or trough, *y*, containing sponge, &c., all arranged similar to and for the same purpose as those hereinabove described. Supported in bearings A A', attached to each side of the frame *a*, between the bearings *s* and *w*, are rods or shafts, B B', each having a heating-chamber, *c' c'*, and provided with screw-ends D D', for the attachment of heating-tubes. Connected with one end of each rod B B' is a lever-arm,

E E′, by which the rod B B′ is actuated. Attached to each of the rods or shafts B B′ is a plate or blade, F F′, arranged longitudinally and obliquely with it, and provided with slots which travel on screws G G′, so as to regulate the bearing of the blade F F′ on a bed or cushion, H H′, covered with enameled cloth or other suitable material attached to each of the bearings A A′, and formed with a heating-chamber, having screw-ends D D′ for the reception of a steam or other heating tube, the blades F F′ being operated by the action of lever-arms E E′, attached to the rods or shafts B B′, so as to bear upon or be released from the enameled or other prepared material passing below them and over the bed or cushions H H′. Between the bearings A A′ is a bar, *d″*, formed and arranged similar to the bar *d′*, hereinabove described. The lower portion of the frame *a* rests on trucks K K, provided with wheels K′ K′, so as to travel on rails or any suitable platform or bed.

The operation of my invention is as follows: The cloth or other material to be enameled or to be covered with water-proof or other substance is wound around the beam or roll *c*, and is then made to pass, by the power communicated to the machinery, under the bar *d* and over the top of the bar *d′*, the corrugated, toothed, or grooved surface of the bars *d d′ d″* serving to smooth and evenly spread to its full width the cloth or other material which is then fed along over the rod or bearing *r*, and below the hopper *k*, from which the enameling, water-proofing, or other substance or compound is deposited upon the cloth or other material, and regulated in its delivery through an opening or throat in the bottom of the hopper *k* by the action of the sliding gate *h*, which is raised or lowered by the operation of the lever-arm *l*. The cloth or other material is then carried along between the smooth rollers *t t′*, which are kept moistened by the dripping of water or other liquid contained in sponges or other suitable substance held in the trough *v*. The cloth or other material is then brought over the cushion H and under the blade F, which is raised or lowered by the action of the lever-arm E, so as to accommodate itself to the thickness of the cloth, &c., which is then fed over the upper surface of the corrugated, toothed, or grooved bar *d″*, and thence between the cushion H′ and blade F′, and is then carried between the smooth rollers *x x′*, from whence it is delivered and placed upon drying-racks. The blades F F′ serve to spread, distribute, and incorporate the enameling or other mixture evenly upon the entire surface of the cloth, &c., upon which it is firmly and evenly pressed by the action of the rollers *t t′* and *x x′*.

The bars *d d′ d″* may, if desired, be arranged with heating-chambers, and may have either the upper or under surfaces formed with corrugations, teeth, or grooves, and the cloth, &c., be made to pass over or under them, as may be required. Either one or more troughs, or one or more sets of rollers and blades may be used. My invention may be operated by hand, steam, or any other suitable motive power.

Having thus fully described my invention, what I claim, and desire to have secured to me by Letters Patent, is—

1. The bars *d d′ d″*, formed on the upper or under surface with grooves, teeth, or corrugations, arranged diagonally on either side of the bars, those on one side being in an opposite oblique direction to those on the other side of the bars, substantially as specified.

2. The hopper *k*, provided with curved arms *f f*, shaft *g*, bifurcated arms *h*, trunnions *i*, steam-chambers *q q*, and pipes *q′ q′*, sliding gate *n*, rod *m*, and lever-arms *l* and *p*, arranged and operating substantially as specified.

3. The combination of the troughs *v* and *y* with the rollers *t t′ x x′*, slotted bearings *s s*, and screws *s″*, substantially as specified.

4. The blades F F′, formed with slots traveling on screws G G, attached to rods or shafts B B′, provided with heating-chambers C C′, and operated by lever-arms E E′, substantially as specified.

5. The cushions H H′, arranged with heating-chambers and connected with bearings A A′, substantially as specified.

6. The transverse rod or bearing *r*, provided with a steam-chamber, and supported by the standards *e e*, in combination with the hopper *k*, substantially as specified.

7. A machine for enameling, water-proofing, or otherwise covering cloth, leather, or other fabrics or materials, provided with a beam or roll, *c*, bars *d d′ d″*, hopper *k*, standards *e e*, curved arms *f f*, shaft *g*, bifurcated arms *h*, lever-arms *l* and *p*, rod *m*, arms *m′ m′*, sliding gate *n*, chambers *q q*, pipes *q′ q′*, rod *r*, smooth rollers *t t′ x x′*, bearings *s s*, troughs *v* and *y*, bearings A A′, shafts B B′, lever-arms E E′, blades F F′, cushions H H′, lever-arms E E′, trucks K K, and wheels K′ K′, all arranged and operating substantially as specified.

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

Witnesses: LUTHER L. ALLEN.

F. H. JACKSON,

GEORGE P. LITTLE.