

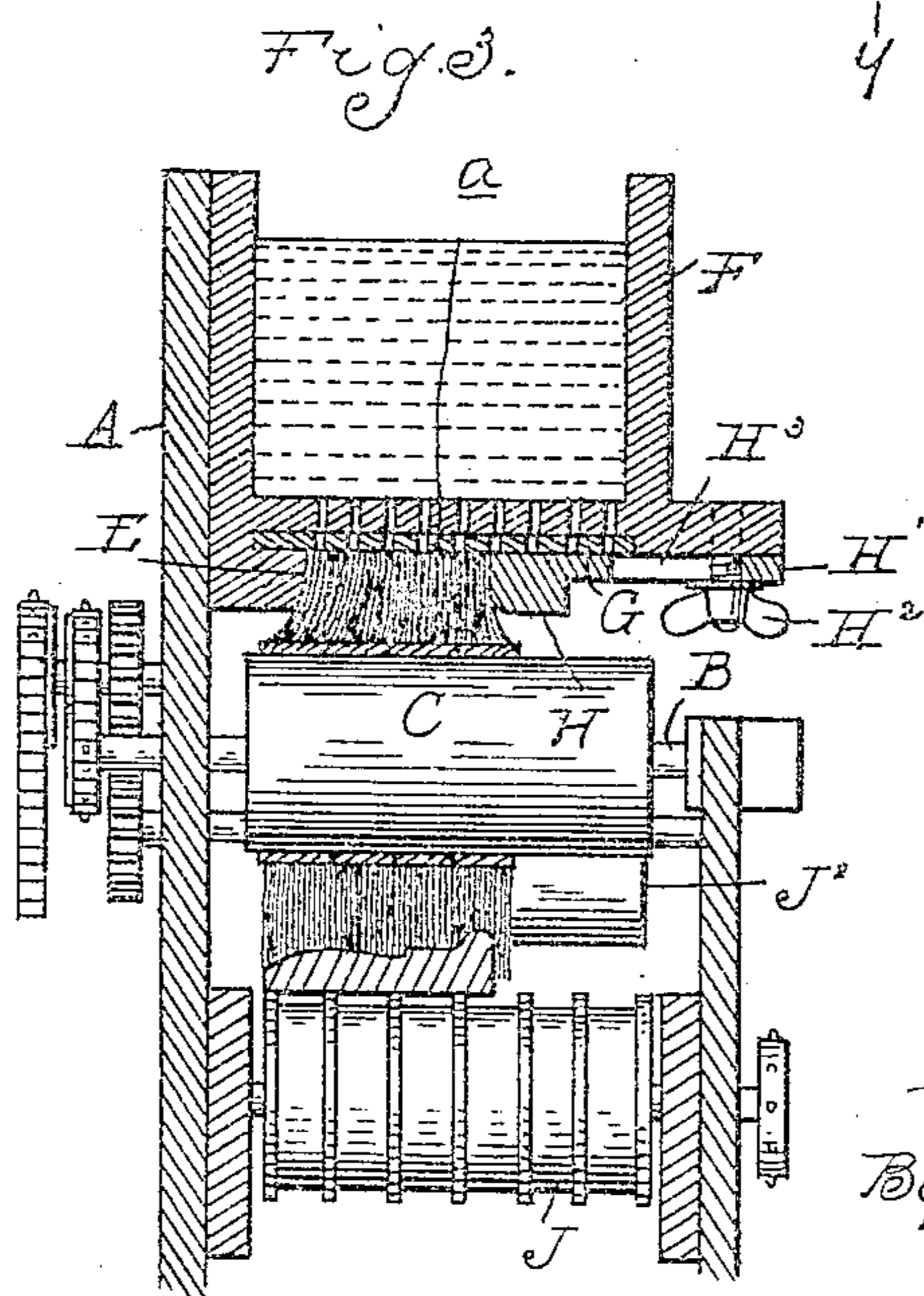
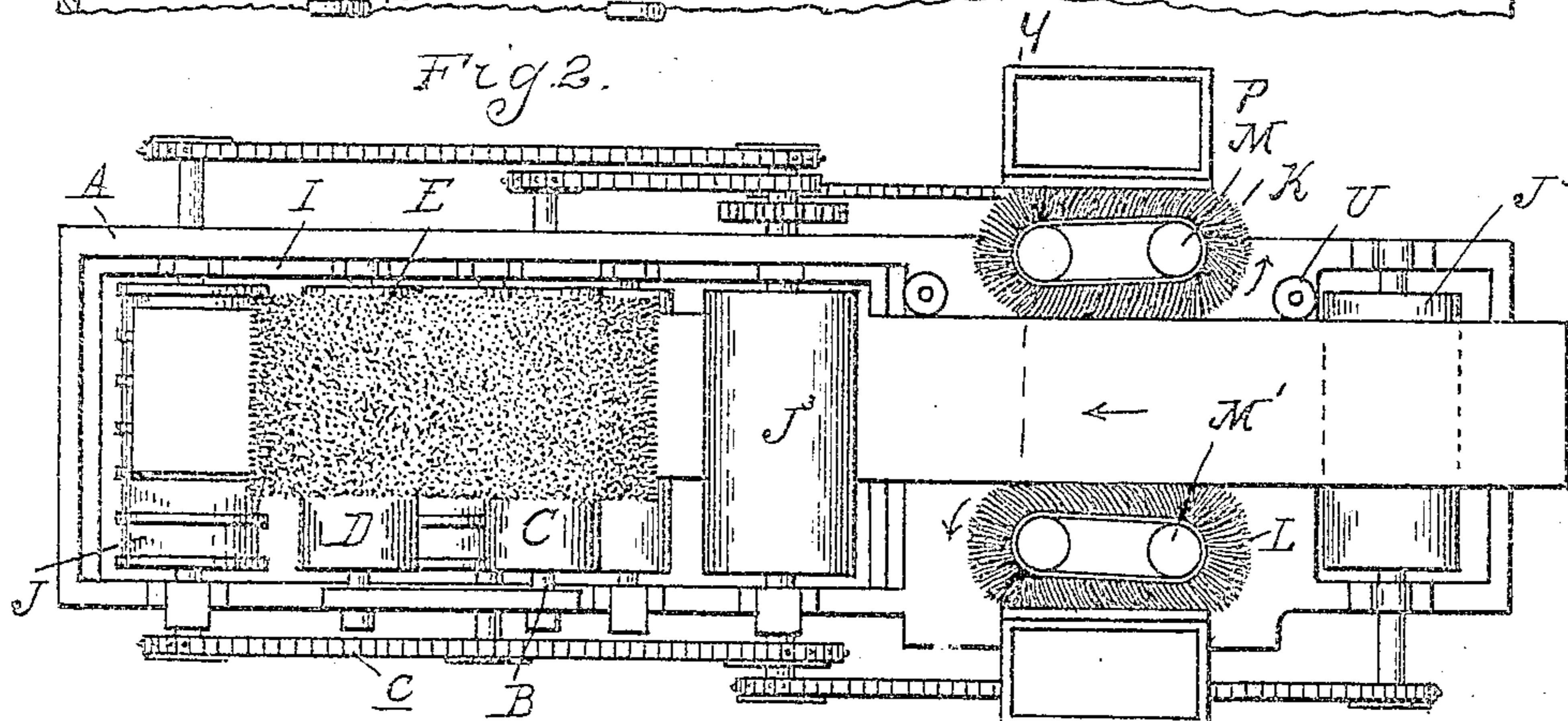
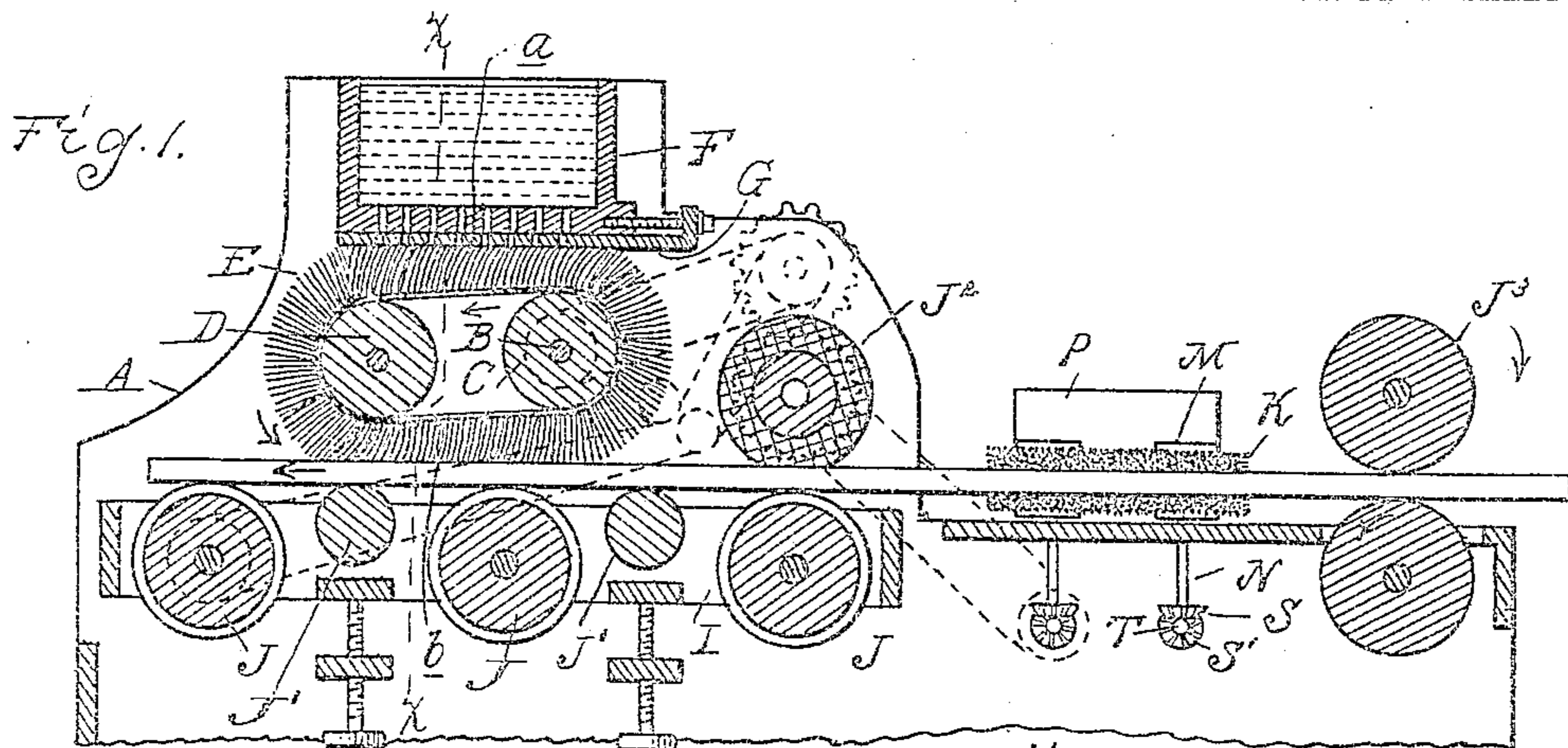
No. 778,709.

PATENTED DEC. 27, 1904.

D. ROBERTSON.
PAINTING MACHINE.

APPLICATION FILED NOV. 11, 1901. RENEWED JULY 30, 1904.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 4.

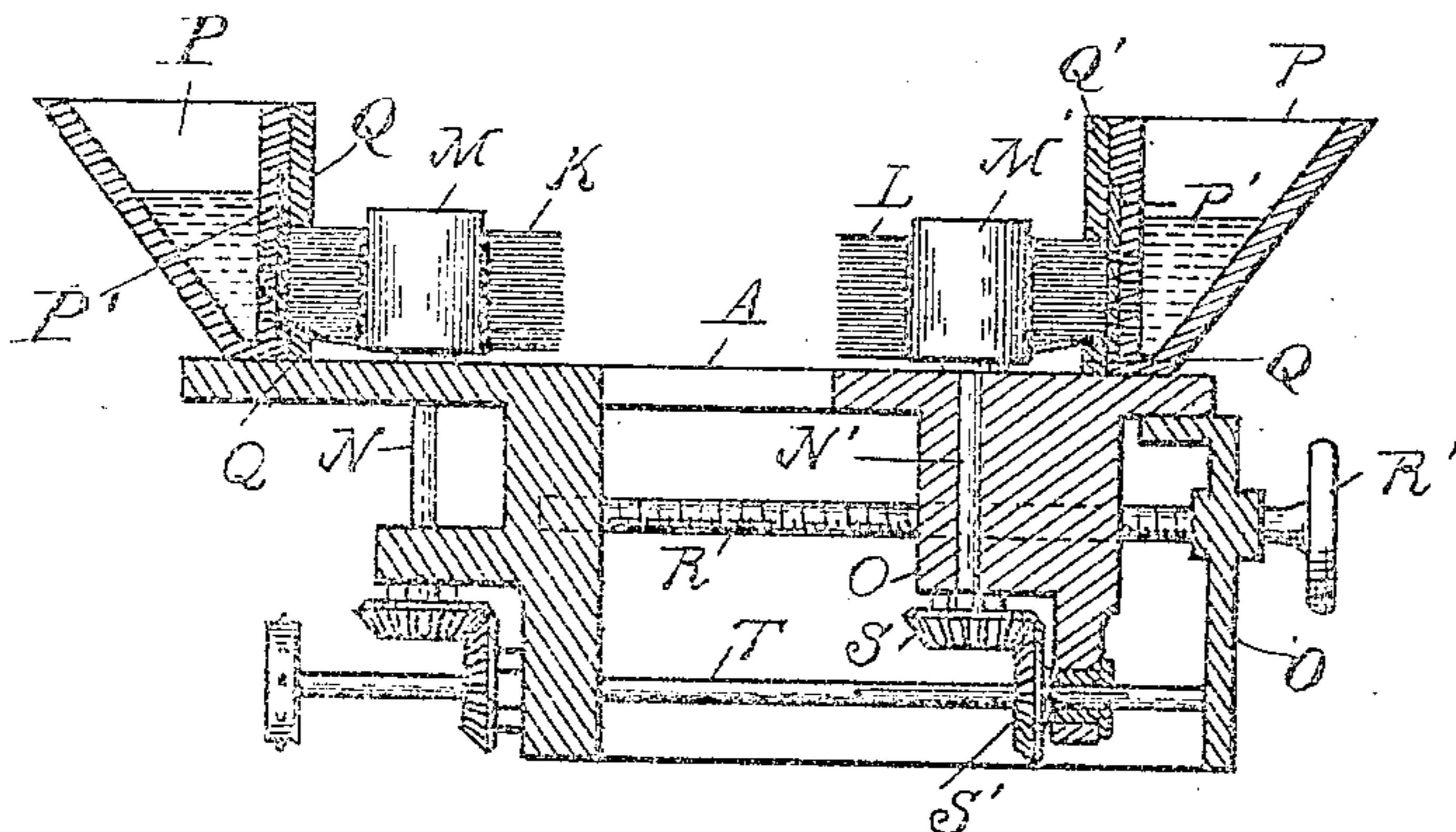
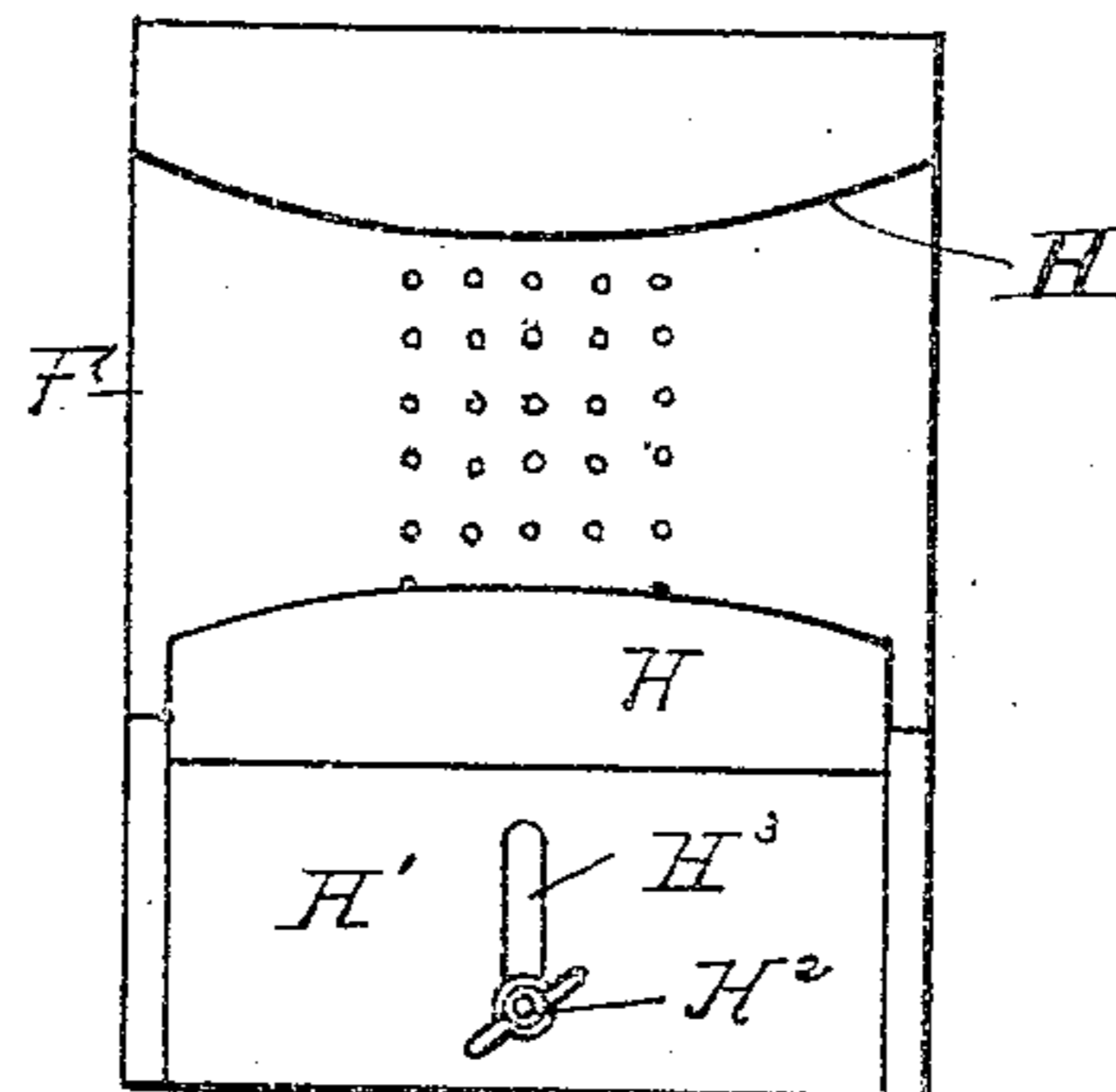


Fig. 5.



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UNITED STATES PATENT OFFICE.

DUNCAN ROBERTSON, OF DETROIT, MICHIGAN.

PAINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 778,709, dated December 27, 1904.

Application filed November 11, 1901. Renewed July 30, 1904. Serial No. 218,786.

To all whom it may concern:

Be it known that I, DUNCAN ROBERTSON, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Painting-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to painting-machines more especially designed for the painting of strips having curved or irregular surfaces, such as moldings.

It is the object of the invention to obtain a machine in which the strips may be rapidly coated without waste of paint or the spattering of the work.

To this end the invention consists in the construction as hereinafter described and claimed.

In the drawings, Figure 1 is a vertical longitudinal section through the machine. Fig. 2 is a plan view thereof with the paint-receptacle removed. Fig. 3 is a cross-section on line *a a*, Fig. 1. Fig. 4 is a cross-section on line *y y*, Fig. 2. Fig. 5 is a bottom plan of the paint-receptacle.

The machine comprises, essentially, a rotary belt brush which may be adjusted in width, feed-rollers for causing the work to travel in contact with said brush, and a paint-receptacle from which the paint is fed to that portion of said brush not in contact with the work.

The difficulty with constructions heretofore made where a rotary brush is employed is that the bristles of the brush in leaving the work will spring outward and spatter the paint. Moreover, difficulty has been experienced in preventing the brush from taking up a greater quantity of paint than needed, with the consequence that the paint will be unevenly deposited upon the surface of the work and will run off upon the machine. This occasions both the waste of paint and the gumming of the machine, so as to interfere with its operation.

With the present invention the difficulty above set forth is avoided, first, by the peculiar construction of the paint-feeding de-

vice, and, secondly, by the peculiar construction and arrangement of the brush or brushes in relation to said feeding device and to the work.

As shown in the drawings, A is a suitable framework. Journaled in this frame is a shaft B, carrying a roll C, and adjacent to this roll is journaled a second roll D.

E is an endless belt brush passing around the rolls C and D, so as to form opposite flat portions *a* and *b* between said rolls.

F is a paint-receptacle, which is secured to the frame above the rolls and brush. The bottom of this receptacle is perforated and is provided with an adjustable slide G, having corresponding perforations. This slide may be moved in any suitable way, as by means of an adjusting-screw, to register its apertures with those in the bottom of the receptacle or to cover the latter, so as to prevent the feeding of the paint. Thus the slide G forms an adjustable valve for accurately regulating the amount of paint passing from the receptacle F. The receptacle F is arranged in such relation to the brush E that the upper flat portion *a* thereof will travel in contact with the lower face of the slide G, thereby receiving the paint fed from the receptacle. In order that the full width of the brush may have the paint uniformly distributed thereto and without danger of leakage at the edges of the brush, guide-strips are placed upon the opposite sides of the receptacle, which force the edge bristles of the brush inward. These guide-strips H are preferably curved as shown, so as to gradually compress the bristles of the brush as they pass toward the center of the receptacle and then gradually to release them. As the perforations in the slide and receptacle are preferably only arranged at the longitudinal central portion, as shown in Fig. 5, the paint passing therethrough will be distributed uniformly to the bristles, which will then be permitted to resume their natural position without spattering the paint.

Below the brush E is arranged a vertically-adjustable bed I, which carries a series of feed-rolls J. This bed may be of any suitable construction and adjustable in any way desired, as by the screws shown in Fig. 1. These

rolls are connected to each other by a suitable drive connection, such as the sprocket-chains *c*. Idler-rolls *J'* are preferably arranged intermediate each pair of rolls *J*. The
 5 feed-roll *J*, immediately in front of the brush *E*, has arranged thereabove a complementary feed-roll *J*². The latter is preferably formed with an elastic surface, such as soft rubber or any suitable elastic material. This is for
 10 the purpose of forming a positive feed for the work without danger of injuring the shaped upper surfaces thereof. The roll *J*² is preferably geared to run at the same speed as its corresponding roll *J* and, if desired, may be
 15 journaled in yielding bearings. This will not, however, be necessary if the surface of the roll be sufficiently yielding.

The construction as thus far described is adapted to coat the upper face of the work
 20 with paint. In order to simultaneously paint the edges of the strip, auxiliary paint devices are provided. These, as shown, consist of two belt brushes *K* and *L*, arranged to travel in a horizontal plane upon opposite sides of the
 25 work and preferably forward of the brush *E*. The brush *K* travels upon rolls *M* upon vertical shafts *N*, which latter are preferably journaled in stationary bearings upon the frame. The brush *L* in like manner runs
 30 upon rolls *M'* upon the vertical shafts *N'*; but the latter are journaled in laterally-adjustable bearings *O* upon the frame. This lateral adjustment is for the purpose of adjusting the brush to paint strips of different width. Each
 35 of the brushes *K* and *L* is provided with a paint-receptacle *P*, and each receptacle is formed with a perforated side and is provided with an adjustable register-slide *P'*, similar in construction to the slide *G* for the receptacle *F*.
 40 The receptacles *P* are also provided with guide-strips *Q*, similar in construction to the guide-strips *H* of the receptacle *F*. The receptacle *P* for the brush *K* may be mounted stationarily upon the frame; but the recepta-
 45 cle for the brush *L* must be provided with a lateral adjustment relative to said frame. This adjustment is preferably provided for by mounting the receptacle upon an adjustable bearing *O*, in which the shafts *N'* are
 50 journaled, and in order to provide an easy means of adjustment for said bearing the screw *R* is arranged to engage with said bearing and is swiveled in the frame and provided with an adjusting-handle *R'* on the front side
 55 of said frame. For driving the shafts *N* and *N'* bevel-gears *S* are arranged upon said shafts, and intermeshing bevel-gears *S'* are secured to a transverse shaft *T*, which latter is journaled in the frame and has a suitable drive
 60 connection, such as the sprocket-and-chain connection, with the feed-rolls *J*.

The machine is preferably provided with an additional pair of feed-rolls *J*³ forward of the brushes *K* and *L* and driven at the same speed
 65 as the feed-rolls *J*. A suitable guide is also

provided, against which one edge of the work will bear in passing between the feed-rolls, and this guide *I* have shown as comprising rolls *U*, journaled upon the frame at opposite ends of the brush *K*. 70

With the construction as thus far described the operation of the machine as follows: Motion is imparted to the various parts of the machine through suitable drive connections, (not fully shown,) by which the feed-rolls are
 75 all driven at the same surface speed and rotary motion is imparted to the brushes *E*, *K*, and *L*. These brushes are preferably driven in a direction opposite to the travel of the work, as indicated by arrows. The operator
 80 feeds the strip to be painted first in between the feed-rolls *J*³, which cause it to travel between the brushes *K* and into engagement with the feed-rolls *J* and *J*². When in en-
 85 gagement with these rolls, the strip is guided by having one edge thereof in contact with the rolls *U*, which hold said edge in proper relation to the brush *K*. The brush *L* is adjusted in position by means of the screw *R*, so that it will contact with the opposite edge of the
 90 strip. The paint which is deposited on the edges of the strip is first fed from the receptacles *P* from the perforated sides thereof, where the proper quantity is regulated by the adjustment of the register-slides *P'*. After
 95 passing through said register-slides the paint will come in contact with the bristles of the brush, while the imperforate portion of the slide will act as a mixing-plate, which will evenly distribute the paint to all of the bristles. 100
 Thus when the bristles have reached the edge of the strip to be painted they will be in a condition to uniformly apply the paint to said edge. The action of the brush *E* is similar to
 105 that of the brushes *K* and *L*. The paint is first fed from the receptacle *F* through the register-slide *G*, which regulates the quantity, and is then distributed among the bristles in the brushing of the latter against the imperforate portions of the slide, the saturated
 110 bristles thus passing around the roll and into contact with the surface of the work, where they will uniformly coat said surface.

In order to prevent spattering of the work, the brushes are so arranged that the bristles
 115 in leaving the contacting surfaces are permitted to gradually assume their natural straight position. This is accomplished by arranging the brushes with their flat portions at a slight incline to the plane of the work and
 120 also to the plane of the paint-applying receptacle. As shown in Fig. 1, the brush *E* is so arranged that the left-hand end of the portion *a* thereof is spaced from the slide *G* a distance equal to the length of the bristles, while the op-
 125 posite end of said portion is much nearer said slide and will thereby cause the ends of the bristles to rub against the under surface of the slide. In like manner the right-hand end of the portion *b* of the brush is farther from the 130

surface of the work than the left-hand end. The effect will be that the bristles in contacting with the surface will first be bent so as to rub against said surface and will then be permitted to gradually straighten out until they fully or nearly assume their natural positions before passing out of contact with the surface. Thus the spattering of the paint is effectively prevented. In passing in contact with the slide G the edge bristles of the brush are bent inward by the guide-strips H, so as to be coated with paint without danger of permitting the leakage at the edge of the brush.

As the strips to be painted vary in width and thickness, it is desirable to provide adjustments in the width of the paint-applying brushes. This is preferably accomplished by making said brushes in narrow sections, which may be arranged side by side upon the same rolls, and thus any width may be obtained by simply adding or removing one or more sections. The alteration in width of the brush requires an adjustment of one of the edge guide-strips. This is provided for by providing one of said strips with a plate H', which contacts with the under face of the slide G and which is laterally adjustably secured in position by clamping-screws H² passing through slots H³ in said plate and engaging with the receptacle F. The adjustment of this plate H' will alter the position of the guide H and at the same time will cut off more or less of the perforated portion of the slide G, so as to restrict the feeding of paint to that section opposite the brush. If desired, the brushes K and L may be formed in sections to permit of similar adjustment in width where work of varying thicknesses is painted. To adjust the machine for different thicknesses of work, the bed I is preferably vertically adjustable upon the frame A, and to prevent the clogging of the feed-rolls J they are preferably grooved, as shown.

What I claim as my invention is—

1. In a painting-machine, an endless belt brush having the contacting portion thereof inclined to the plane of the contacting surface and in a straight line from one end to the other of the brush, and means for rotating said brush in a direction in which the bristles will be gradually withdrawn from contact to prevent spattering.

2. In a painting-machine, the combination with a paint-distributing surface, of a rotary belt brush adapted to draw its bristles over said surface, said surface being inclined to the path of said bristles thereover, whereby the latter are gradually withdrawn from contact to prevent spattering.

3. In a painting-machine, the combination with a paint-distributing surface of a rotary belt brush arranged at an angle thereto being adapted to contact one portion thereof with said distributing-surface and another portion

with the work, said brush being also adapted in its rotation to gradually withdraw its bristles from both said distributing-surface and the work to permit the bristles to straighten out before leaving contact with said surfaces thereby preventing spattering.

4. In a painting-machine, the combination with a paint-distributing surface, of an endless belt brush arranged between said distributing-surface and the work and having opposite flat portions respectively in contact therewith, said flat portions being inclined to the plane of the work and the plane of said distributing-surface whereby the brush-bristles are gradually withdrawn from each of said surfaces to prevent spattering.

5. In a painting-machine, the combination of a paint-receptacle having a wall with a multiple of perforations therein, an endless bristle brush, and means for drawing said brush over the perforated outer surface to receive and uniformly distribute the paint.

6. In a painting-machine, the combination of a paint-receptacle having a wall with a multiple of perforations therein, a corresponding apertured register-slide in adjustable contact with said wall, and an endless bristle brush having a portion thereof in contact with the perforated outer surface of said wall whereby the paint fed through said perforated wall and slide is uniformly distributed to the bristles of said brush.

7. In a painting-machine, the combination with a paint-receptacle having a perforated wall, of an endless brush adapted to be drawn over the outer surface of said wall and guide-strips at the edges of said brush adapted to press the edge bristles inward opposite the perforated portions of said wall.

8. In a painting-machine, the combination with a paint-receptacle having a perforated wall, of an endless brush adapted to be drawn over the outer surface of said perforated wall, and edge guides for said brush adapted to gradually compress and release the edge bristles of said brush in the travel thereof, for the purpose described.

9. In a painting-machine, the combination with a paint-receptacle having a perforated wall and an endless brush adapted to be varied in width contacting with the perforated outer surface of said wall, of an edge guide for said brush laterally adjustable upon said wall and forming an adjustable cut-off for the perforations thereon.

10. In a painting-machine, the combination with longitudinal feed mechanism for the work, of a paint-applying belt brush arranged to contact with the upper surface of said work and a second paint-applying belt brush arranged to contact with the edge of the work, the planes of movement of both brushes being parallel to the line of feed of the work.

11. In a painting-machine, the combination

with longitudinal feed mechanism for the
work, of a paint-applying belt brush arranged
to contact with the upper surface of said work,
a second paint-applying belt brush for con-
5 tacting with one edge of the work and a third
belt brush laterally adjustable in relation to
the second for contacting with the opposite
edge of said work, the planes of movement of

all of said brushes being parallel to the line
of feed. 10

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

DUNCAN ROBERTSON.

Witnesses:

L. J. WHITTEMORE,
H. C. SMITH.