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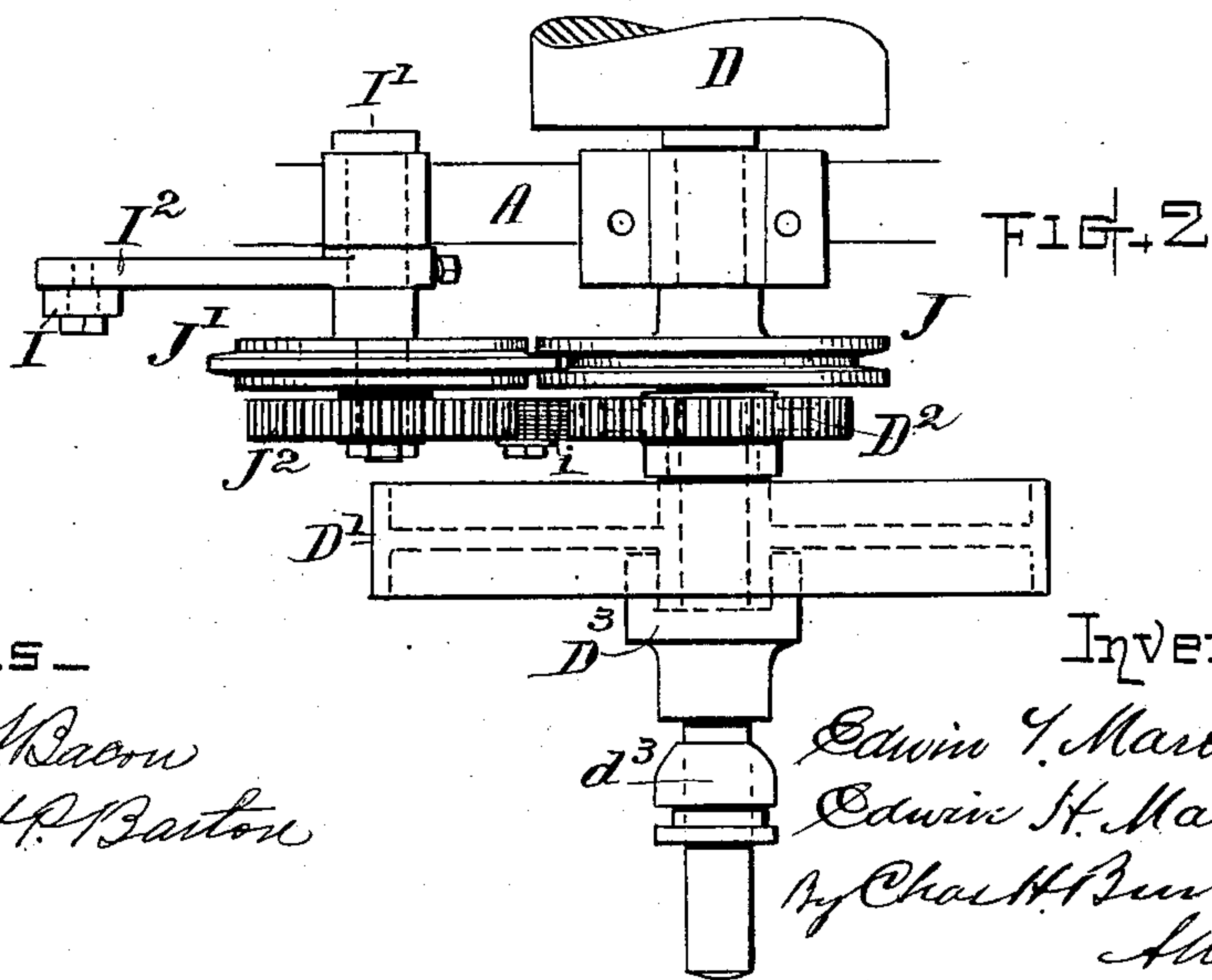
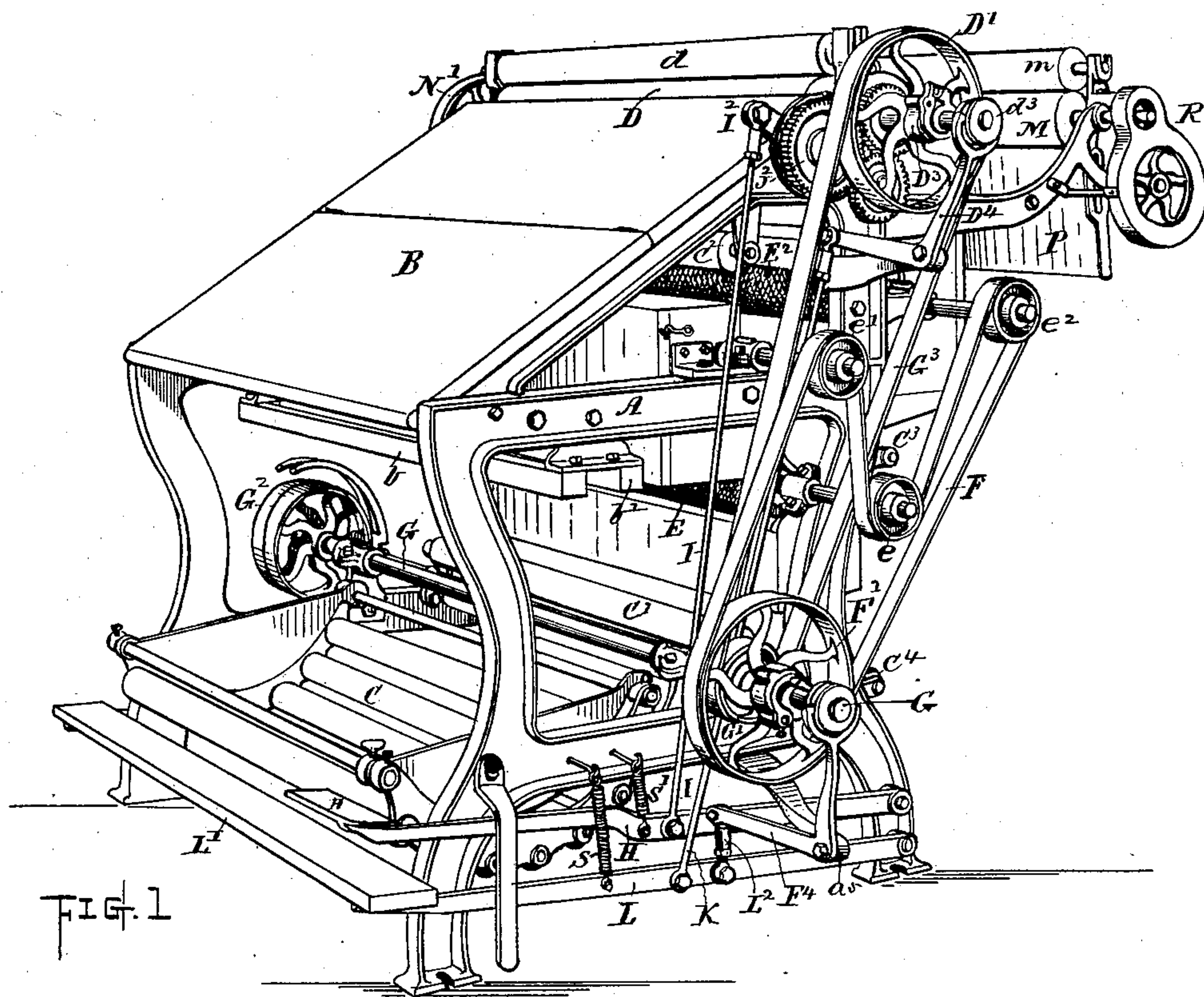
Patented Aug. 2, 1898.

**E. T. & E. H. MARBLE.**  
**CLOTH INSPECTING MACHINE.**

(Application filed Oct. 6, 1897.)

(No Model.)

**2 Sheets—Sheet 1.**



Witnesses \_\_\_\_\_

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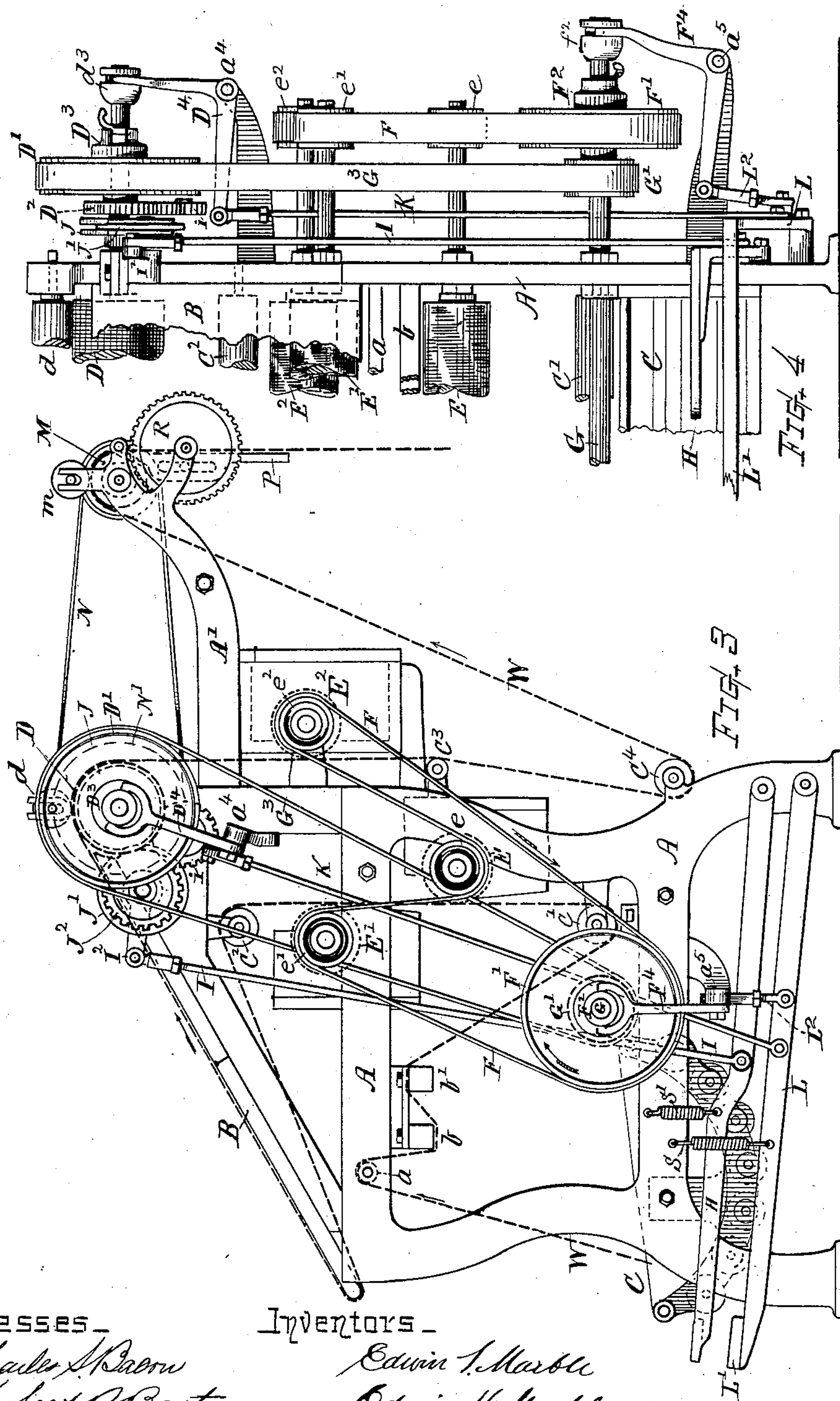
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# UNITED STATES PATENT OFFICE.

EDWIN T. MARBLE AND EDWIN H. MARBLE, OF WORCESTER,  
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## CLOTH-INSPECTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 608,468, dated August 2, 1898.

Application filed October 6, 1897. Serial No. 654,226. (No model.)

*To all whom it may concern:*

Be it known that we, EDWIN T. MARBLE and EDWIN H. MARBLE, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Cloth-Inspecting Machines, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of our present invention is to provide a cloth-inspecting machine of high practical efficiency having an inspection-table, a reversible draft-roll feed or means for carrying the cloth, and rotary brushing appliances operating and controlled in conjunction with said propelling-feed. Said mechanism organized and adapted for a reverse automatic action of the feed or draft roll devices independently of the brushing appliances, or wherein the brushes are rendered operative simultaneously with the advancing feed of the cloth and non-operative with the reversed action of the feed or draft rolls; also to render the advance or reverse operation of the mechanism under instantaneous control of the inspecting attendant.

Our invention consists in providing a cloth-inspecting machine with means for disconnecting the operating mechanism of the brushes and for then imparting reverse rotative action to the feed or draft roll, so that the cloth can be stopped and automatically run backward by said draft-rolls for reinspection of any portion after it has passed the inspection-table without having the surface of the cloth subjected to the brushing action during the backward-draft movement or while remaining idle at any position of its web.

Our invention further consists in a cloth-inspecting machine having its various parts combined and organized for operation in the peculiar manner illustrated and explained, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a perspective view of our improved cloth-inspecting machine. Fig. 2 is a plan view of the draft-re-

versing gearing. Fig. 3 is a side view, and Fig. 4 is a front view, of a part of the machine.

Referring to parts, A indicates the main frame, provided with suitable projections and bearings for supporting the operating mechanism and carrying upon its tip the inclined inspection-table B, preferably having a central hinging-joint for turning up of the lower part.

C indicates the cradle, of usual form, upon which the cloth is placed in a roll or plaited web preparatory to its passage through the machine.

Extending across the frame, beneath the front of the table, are the guide and tension bars *a b b'* for smoothing out the cloth as it is drawn from the cradle, also at a more rearward position the lower and upper guide-rolls *C'* and *C''*. A main driver-shaft *G* is mounted in bearings at the lower central part of the frame and provided at one end with the tight and loose pulleys *G''* for receiving the power-supply belt and at its other end carrying the draft-operating pulley *G'* and the brush-operating pulley *F'*, arranged as hereinafter more fully explained.

D indicates the draft roll or feeder, consisting of a frictionally-surfaced or cloth-covered roll arranged adjacent to and parallel with the upper rear edge of the table B, with its shaft mounted to turn in bearings on the end frames, and surmounted by the presser or top roll *d*, resting on the draft-roll surface and having its journals running loose in suitable upwardly-forked bearings in well-known manner. Mounted upon the shaft of the draft-roll there is a loose-running pulley *D'*, carrying at the inner end of its hub or sleeve a spur-gear *D''*, that rotates with the pulley, which latter is operated by a belt *G'''* from the pulley *G'*, fixed on the driving-shaft. A friction-clutch *D'''* is provided for connecting the pulley *D'* to the draft-roll shaft for direct operation of the draft-rolls, the sliding clutch-controlling cone *d'''* thereof being embraced in the fork of the angular shifting lever *D''''*, fulcrumed on a stationary part of the frame at *a''* and having its inwardly-projecting arm connected by a rod *K* with the treadle-lever *L*, so that depression of the treadle-board *L'*



effects engagement of the clutch and elevation of the treadle releases the clutch. A train of reversing-gearing is arranged for actuating the draft-roll D in backward rotation, said gearing comprising in the present instance the peripherally-grooved friction-disk J, rigidly fixed on the draft-roll shaft, the disk J' having the peripheral wedge-shaped flange or tongue adapted for frictionally engaging with said grooved disk and the spur-gear J<sup>2</sup>, in connection with said flanged disk, mounted on an eccentrically-pivoted bearing-stud I', having an arm I<sup>2</sup>, the swinging of which shifts the friction-disk J' into and out of engagement with the disk J. The arm I<sup>2</sup> is connected by the rod I with a secondary treadle-lever II, so that depression of said treadle throws the friction-gearing into action for reversing the rotation and feed of the draft-roll D.

The friction flange-disk J' and gear J<sup>2</sup> are connected to each other and receive their motion from the gear D<sup>2</sup> on the pulley-sleeve through the intermediate gear i, the direction of rotation of the friction-disk J' being thus opposite to that of the draft roll pulley D', so that when the draft-roll D is rotated by the clutch of the pulley to the draft-roll shaft the draft-roll and feed of the cloth is normally forward; but when the motion is transmitted to the draft-roll through the friction-flange J' and disk J then the rotation of the draft-rolls is in a reverse direction and returns the cloth backward upon the table for the reinspection, correction, or marking of any defective portion that may have been inadvertently or intentionally permitted to advance beyond the draft-rolls. This particular arrangement of roll driving and reversing gear is not herein presented as a new mechanical movement, nor as such made a special feature of our claim otherwise than as an element of the combination, as we have previously employed reversing-gearing of similar construction in another machine.

E and E' indicate two primary brushes for clearing the cloth before it passes to the inspecting-table, and E<sup>2</sup> is the secondary brush for clearing the face of the cloth after it has passed the table and draft-rolls. In our present invention the essential design is that these brushes shall operate during the forward movement of the cloth by the draft-roll feed and cease operation during any backward movement of the draft-roll feed, as well as when the feed movement is stopped, and also that the backward feed action of the draft-roll shall effect a power-actuated movement of the cloth. The brushes are arranged at the positions shown with their rotating shafts mounted in bearings on the frame A, the primary brushes acting upon the fabric where it is extended between the lower guide-roll C' and the upper guide-roll C<sup>2</sup> and the secondary brush acting on the fabric as it runs from the draft-roll D to the guide-rolls C<sup>3</sup> and C<sup>4</sup>. The brushes are severally inclosed,

excepting at their working line, in suitable boxes, which receive the lint or matter cleared from the cloth. The brush-shafts are respectively provided with pulleys  $e\ e'\ e^2$  for the brush-driving belt F, which runs from the operating-pulley F' on the driving-shaft G and passes around the several brush-pulleys  $e\ e'\ e^2$ , as shown. The pulley F' is loose on the driving-shaft G, and a friction-clutch F<sup>2</sup> is provided thereon for connecting the pulley for operation with the shaft. Said clutch is thrown into and out of engagement by an angle-lever fork F<sup>4</sup>, fulcrumed at  $a^5$  upon a bracket or arm fixed to the frame. The horizontal arm of the fork-lever F<sup>4</sup> is connected by a link L<sup>2</sup> with the treadle-lever L, so as to be moved at the same time with the clutch-actuating lever D<sup>4</sup>, that controls the draft-roll clutch. Springs S and S' are provided for returning the treadles L and II to the position when relieved from pressure thereon.

M indicates a delivery-feed roll having its journals mounted in bearings on backwardly-projecting arms A', fixed on the main frame at the rear part of the machine. Said roll M is operated by a belt N from a pulley N' on the left-hand end of the draft-roll shaft. A pressure-roll *m* rests upon the roll M and is journaled in open-fork bearings, as shown.

P indicates a swinging plaiting-down device operated in conjunction with the delivery-feed roll through suitable gearing at R. The guide-roll C<sup>4</sup> is arranged at the lower rear part of the frame and guide or roll C<sup>3</sup> for steadying the cloth below the brush E<sup>2</sup>. The course of the cloth through the machine is as indicated on Fig. 3 by the dotted line W, its normal forward movement being in the direction shown by the arrow.

In the operation of the machine the draft-rolls, delivery-feed mechanism, and brushes are simultaneously put into effective action by depression of the treadle-lever L, the attendant placing a foot upon the board L'. The cloth moves forward over the inspecting-table in an upward receding direction, thereby enabling the eye to readily detect imperfections, and this, too, with the cloth moving at a comparatively rapid speed. The draft-rolls and delivery-feed are put into reverse action without any operation of the brushes by depression of the secondary treadle II. Release of the treadles stops the action, and thereby arrests the feed of the cloth.

The driving-pulley and operating-shaft G of the machine continue in constant motion, while the control of the draft-rolls and brushes is effected by the quick-acting frictional-clutch devices responding to the depression and rise of the primary and secondary treadles, so that the starting and stopping of the draft-rolls and brushes for feeding and arresting the cloth in its passage over the inspection-table and the reversal of the draft-rolls are effected instantaneously or as quickly as the foot can act on the treadle, the reversing of the action of the draft-rolls re-



quiring only such instant of time as is consumed in passing the foot from one treadle to the other. Hence the cloth in its passage for inspection can be very rapidly and easily manipulated and the work of inspecting performed with the greatest despatch and with comparatively little manual labor.

What we claim as our invention, and desire to secure by Letters Patent, is—

10 1. The combination as described, with the inspection-table, the draft-rolls at the rear edge of said table, the draft-roll pulley and its clutch mounted on the shaft of said roll, the revolving brushes, and the brush-pulleys;  
 15 of a frictional draft-roll-reversing mechanism operated from said draft-roll pulley, the driver-shaft provided with the draft-roll-operating pulley fixed thereon, and the brush-operating loose pulley and its clutch mounted  
 20 thereon, the belts running on the respective pulleys, the primary treadle and treadle connections for actuating the two pulley-clutches, and the secondary treadle and connections for shifting said draft-roll-reversing mechanism into and out of engagement, all substantially as and for the purposes set forth.

2. In a cloth-inspecting machine, the combination, of an inspecting-table, draft-roll, draft-roll-operating mechanism, revolving  
 30 brushes, and brush-operating mechanism; mechanism for reversing the draft-roll action, and a treadle-actuated means for controlling said draft-roll-reversing mechanism for operation independently of the brush-operating  
 35 mechanism, for the purpose set forth.

3. In a cloth-inspecting machine, the combination, as described, of the tension-bars, the primary oppositely-acting rotary brushes, the guide-rolls  $C^1$ ,  $C^2$ , the inspection-table over which the cloth passes normally in receding direction, the draft-rolls adjacent to the rear edge of said table, the secondary brush following said draft-rolls, the guide-rolls  $C^3$ ,  $C^4$ , the delivery-feed rolls, means for operating said draft and feed rolls in forward and reverse directions, mechanism for effecting rotation of the brushes, and a controlling-treadle and connections whereby said brushes are controlled for action in unison with the forward action of the draft-rolls, for the purposes set forth.

4. The combination, as described, with the draft mechanism and the brush mechanism in a cloth-inspecting machine; of the draft-roll pulley  $D^1$  on the draft-roll shaft, the brush-operating pulley  $F^1$  and its clutch on the driver-shaft  $G$ , the clutch-actuating angle-levers  $D^4$  and  $F^4$ , the driver-shaft  $G$  carrying the pulley  $F^1$ , and having the pulley  $G^1$  fixed thereon, the belts  $G^5$  and  $F$  arranged on said pulleys, the treadle-lever  $L$  and clutch-lever connections  $K$  and  $L^2$ , for the purposes set forth.

Witness our hands this 4th day of October, 1897.

EDWIN T. MARBLE.  
 EDWIN H. MARBLE.

Witnesses:

CHAS. H. BURLEIGH,  
 ELLA P. BLENUS.