(No Model.) 2 Sheets—Sheet 1.

G. W. ELWELL & B. FAY.

HAT SIZING MACHINE.

No. 344,820. Patented July 6, 1886.

Fig. 1.

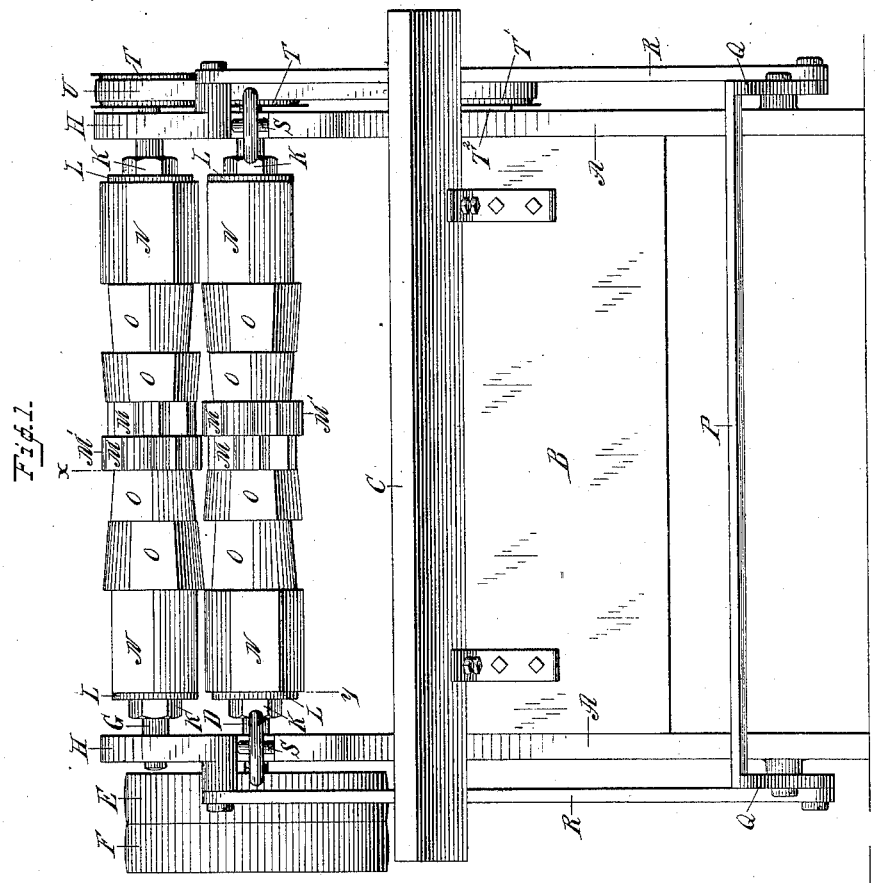
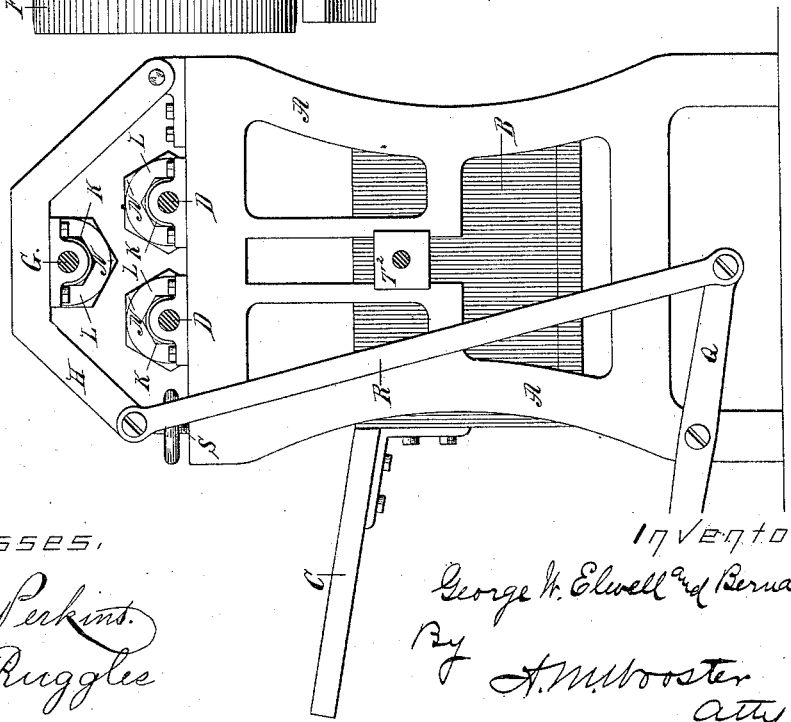


Fig. 2.



Witnesses,
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C. E. Ruggles

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

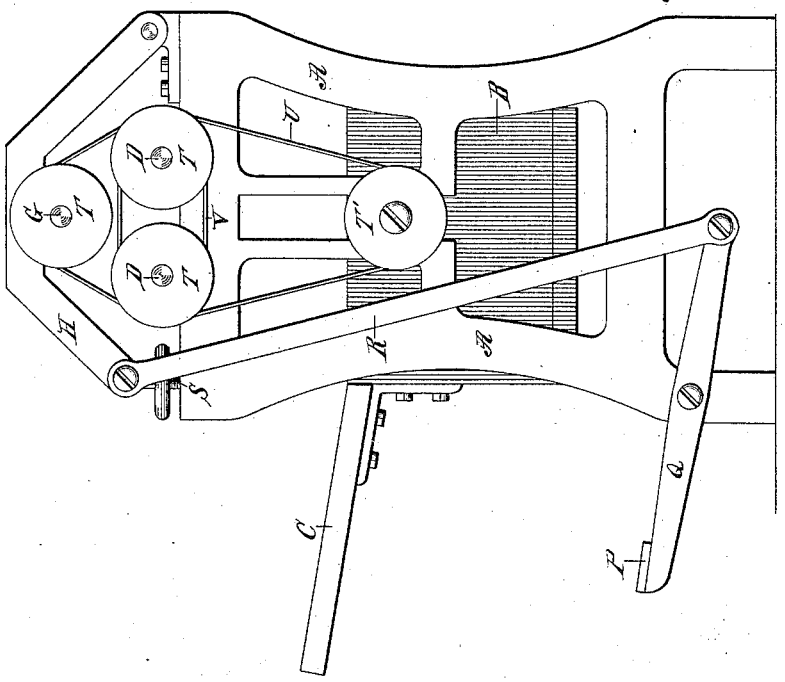
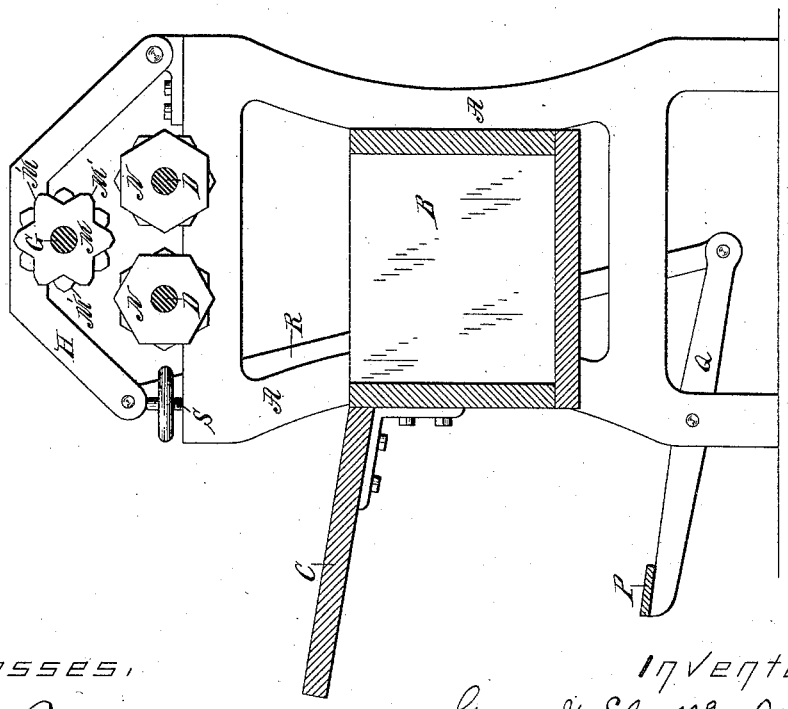


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE W. ELWELL AND BERNARD FAY, OF DANBURY, CONNECTICUT; SAID ELWELL ASSIGNOR TO SAID FAY.

HAT-SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 344,820, dated July 6, 1886.

Application filed October 2, 1885. Serial No. 178,825. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. ELWELL and BERNARD FAY, citizens of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hat-Sizing Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention has for its object to simplify and improve the construction of this class of machines. With this end in view we have devised the novel construction which we will proceed to describe, referring by letters to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the machine complete; Fig. 2, an end elevation, the shaft being shown in section with the pulleys removed; Fig. 3, a transverse section of the machine, the section-line of the upper roller being at *x* in Fig. 1, looking toward the center, and the section-line of the lower rollers being at *y* in Fig. 1, looking toward the center; and Fig. 4 is an end view of the machine complete.

Similar letters denote like parts in all the figures.

A is the frame-work, B the tank, and C the table. These parts may be of any convenient construction.

D represents two shafts journaled on the frame-work, one of said shafts being provided with a driving-pulley, E, and loose pulley F, of ordinary construction. G represents another shaft journaled in angular arms H, which are pivoted at the opposite ends of the frame-work. These arms are so formed that the normal position of shaft G is above shaft D, and equidistant from both. These shafts carry the sizing-rollers, which are a very important feature of our invention. The novelty consists in forming these rollers of series of polygonal blocks placed centrally upon the shafts and clamped together at the ends by means of nuts K, which engage screw-threads upon the shafts and bear against washers L. In the drawings we have shown these rollers as composed of eight independent blocks. The thickness of the blocks relatively to each other, beginning at the center, is as two, three, four, and six. These proportions, however, are not arbitrary, although we have found the proportions shown perfectly satisfactory in use. The shape of these blocks is clearly indicated in Fig. 3. The two central blocks, which we will designate by M, are angular—that is, they are provided with projections M′. We have shown six of these projections; but any other suitable number may be used, if preferred. The two end blocks, designated by N, are straight-sided polygons. In the present instance we have shown hexagons, although any other polygonal form may be used, if preferred. Between the central blocks and the end blocks we place two or more tapering polygonal blocks. These are designated by O. In the present instance they are hexagons, like the others. The arrangement of all of these blocks relatively to each other is also clearly illustrated in Fig. 3. The two central blocks are so placed that the projections of one block come in line with the depressions between the projections upon its companion block. The other blocks are arranged in the same position relatively to each other as blocks M—that is to say, the blocks are so placed upon the shaft that the angles or projections upon one block come midway between the angles or projections on the next block. The greatest diameter of all of the blocks is the same—that is to say, the diameter of each block from point to point is the same as all the others. By making blocks O tapering they are caused to work the stock in the bundles of hat-bodies toward the center. The journals of the lower rollers are fixed upon the frame-work; but the upper roller may be readily raised or lowered by means of footboard P, levers Q, pivoted to the frame-work, and rods R, which connect the levers with arms H.

S represents screw-studs engaging the frame-work, the upper end of which serves as a stop to limit the downward movement of arms H. We are thus enabled, by turning screw-studs S in or out, to adjust the upper roller at any desired distance from the lower rollers. As stated above, the driving-pulley may be placed upon

either of the lower rollers. At the opposite end of the machine the roller-shafts are all provided with flanged pulleys T.

U represents a belt passing over pulleys T, and also over a pulley, T', which is journaled in a sliding block, T^2, the latter being adapted to move vertically in the frame-work. (See Figs. 2 and 4.) In addition to belt U, the pulleys upon the two lower shafts are connected by a belt, V, which runs under belt U. It will thus be seen that the motion of the lower shaft, which carries the driving-pulley, is imparted to both of the other shafts, thus causing the three rollers to rotate in the same direction, as is common in this class of machines.

The mode of operation does not vary from other machines of this class. The hat-bodies are dipped in hot water in the tank and then rolled in bundles upon the table. The upper roller is then lifted by pressing down the footboard and a bundle of hat-bodies placed between the rollers. The action of the rollers will be to keep the bundle rolling over and over, during which time it will be subjected to a continual beating and thumping action from the projections of blocks M, and also from the angles or points of blocks O. As stated above, the tendency of blocks O is to work the stock toward the center. The end blocks, N, will be required to do very little work. Should bundles of bodies, however, happen to come in contact with the end blocks, the action will be substantially the same as that of the central blocks.

It will of course be understood that the number, shape, and arrangement of the blocks may be varied greatly without departing from the spirit of our invention, the gist of which lies in the general construction of the machine, and more especially in the use of polygonal or angular blocks so placed upon the shaft that the angles or projections upon one block are in line with the depressions between the angles or points of the next block.

We are of course aware that movable bearings in this class of machines are not new—as, for example, in Patent No. 288,747. We therefore make no claim thereto, nor to the details of construction therein shown.

Having thus described our invention, we claim—

1. In a hat-sizing machine, sizing-rollers whose shafts are provided with flanged pulleys, the opposite end of one of said shafts being provided with a driving-pulley, in combination with a flanged pulley, T', carried by a sliding block, a belt, V, connecting the pulleys upon the two lower shafts, and a belt, U, passing outside of belt V and over all of the pulleys.

2. A sizing-roller consisting of polygonal blocks placed centrally upon a shaft, and means—for example, collars and nuts—whereby the blocks are clamped firmly in position.

3. A sizing-roller consisting of polygonal blocks placed upon a shaft in such a manner that the angles or projections upon each block lie between the angles or projections upon the next block, and means—for example, collars and nuts—whereby the blocks are clamped firmly in position.

4. A sizing-roller consisting of blocks having six or more points or projections, said blocks being secured upon a shaft in such a manner that the points upon each block lie between the points of the next block, substantially as and for the purpose set forth.

5. A sizing-roller consisting of two or more central blocks having projections M', placed with the projections of each block in line with the depressions of the next, polygonal end blocks having straight sides, and two or more polygonal blocks between the central blocks and the end blocks, whose sides taper from the outer end inward toward the center, as and for the purpose set forth.

6. A sizing-roller consisting of a series of blocks, the central blocks being thinnest and having projections M', the other blocks being polygons increasing in thickness toward each end of the roller, two or more of which taper from their outer ends inward, and all of which are placed with their angles or points out of line with each other.

7. In a hat-sizing machine, rollers constructed as described, a frame-work upon which two of said rollers are journaled, and arms H, which carry another roller, in combination with levers Q, rods R, belts U and V, and pulleys T and T', as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE W. ELWELL.
BERNARD FAY.

Witnesses:
JOHN R. SPAIN,
JAS. J. MCPHELEMY.