

J. S. TAYLOR.

SCALDING NAPPED HATS AND SIZING OR FELTING HAT AND  
OTHER FABRICS.

No. 277,081.

Patented May 8, 1883.

Fig. 1.

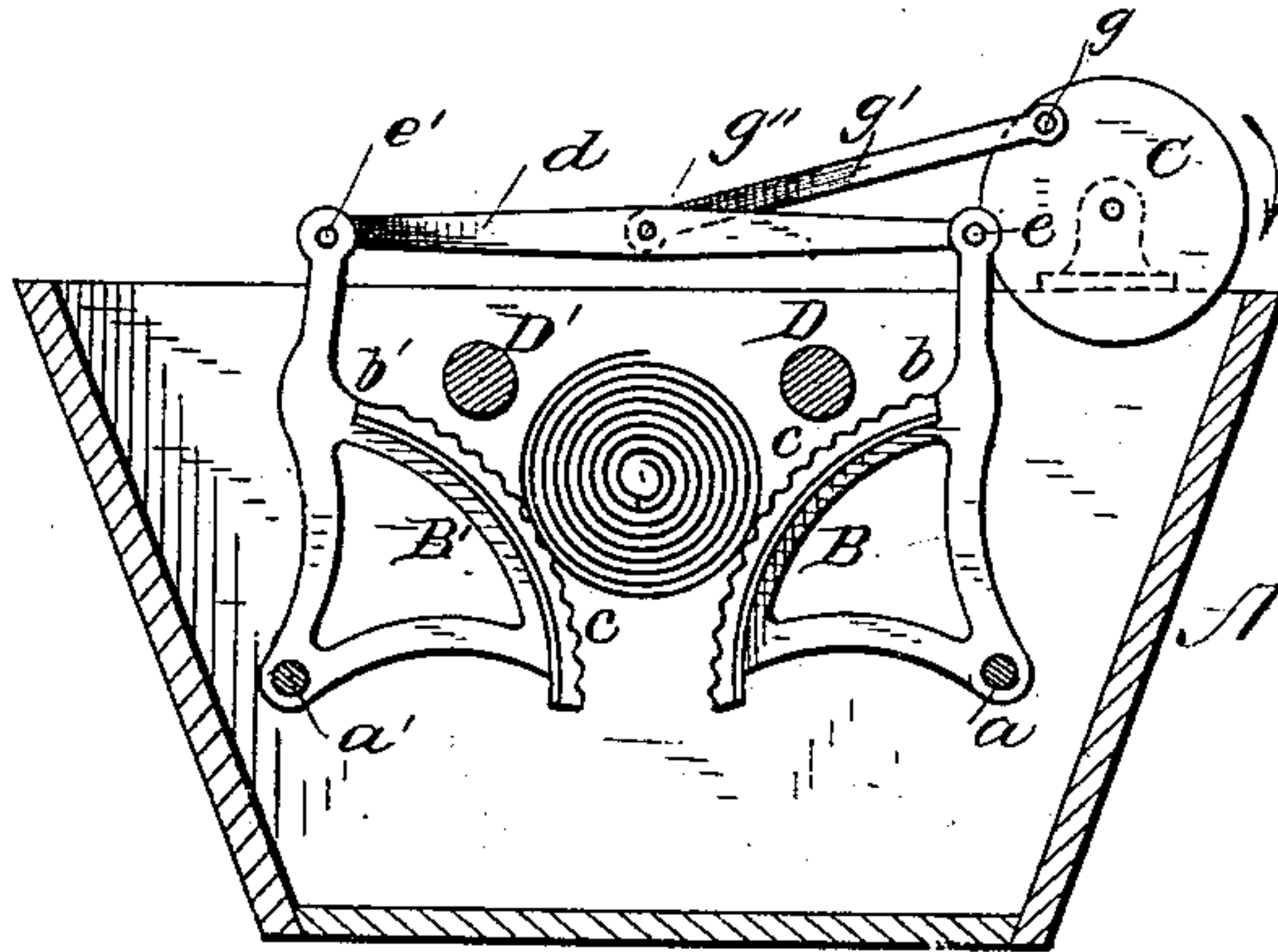
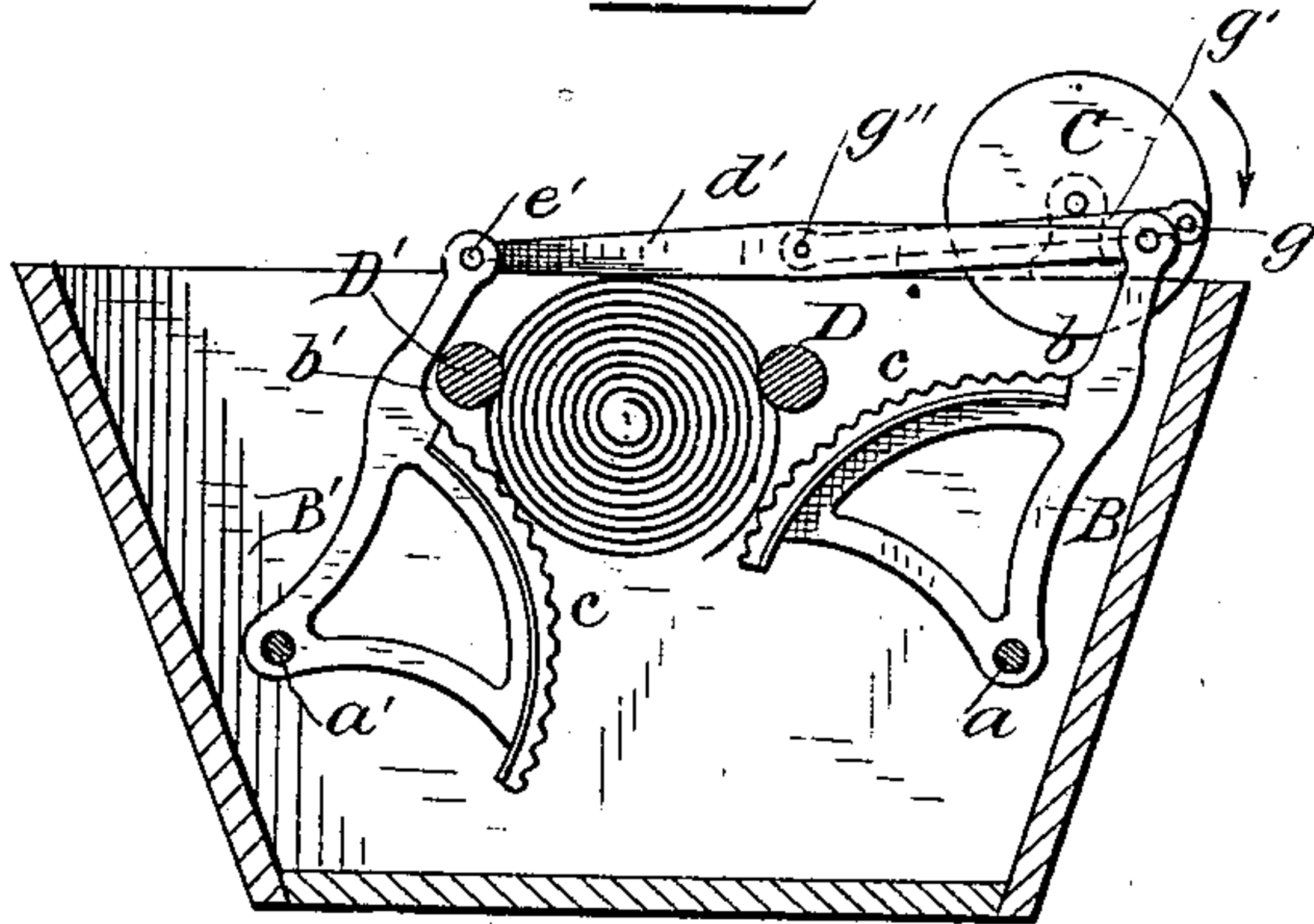


Fig. 2.



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Fig. 3

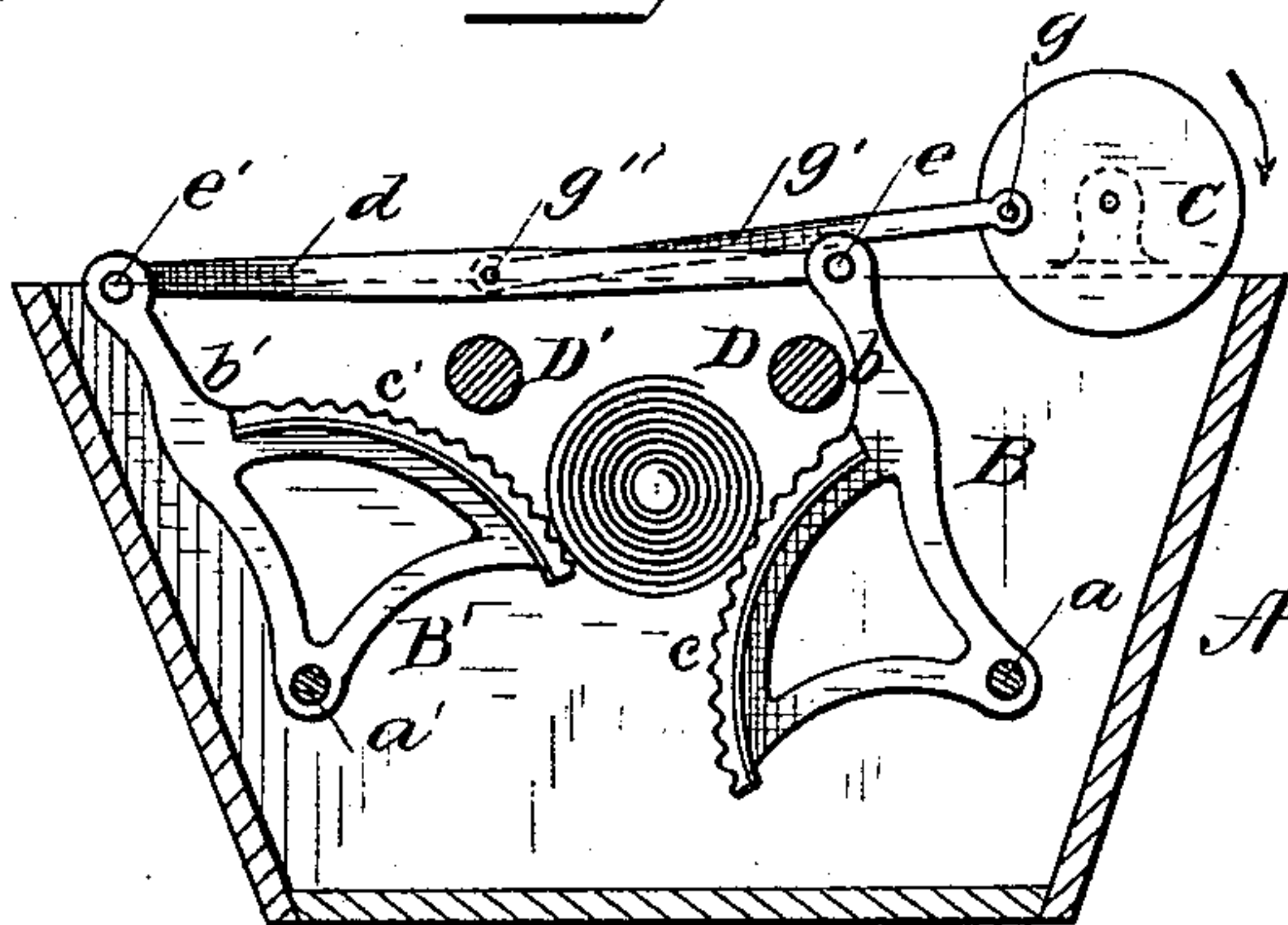


Fig. 4

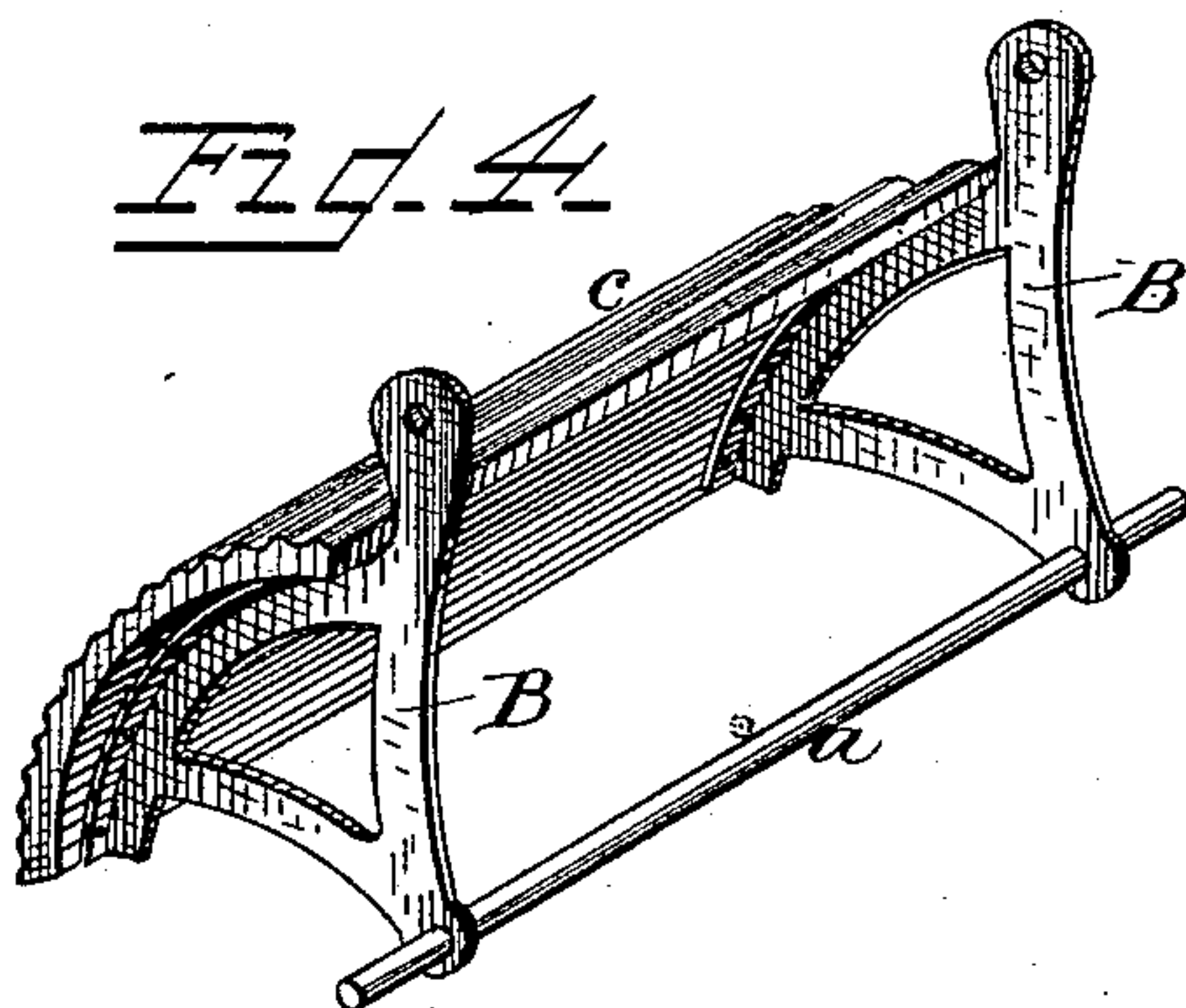
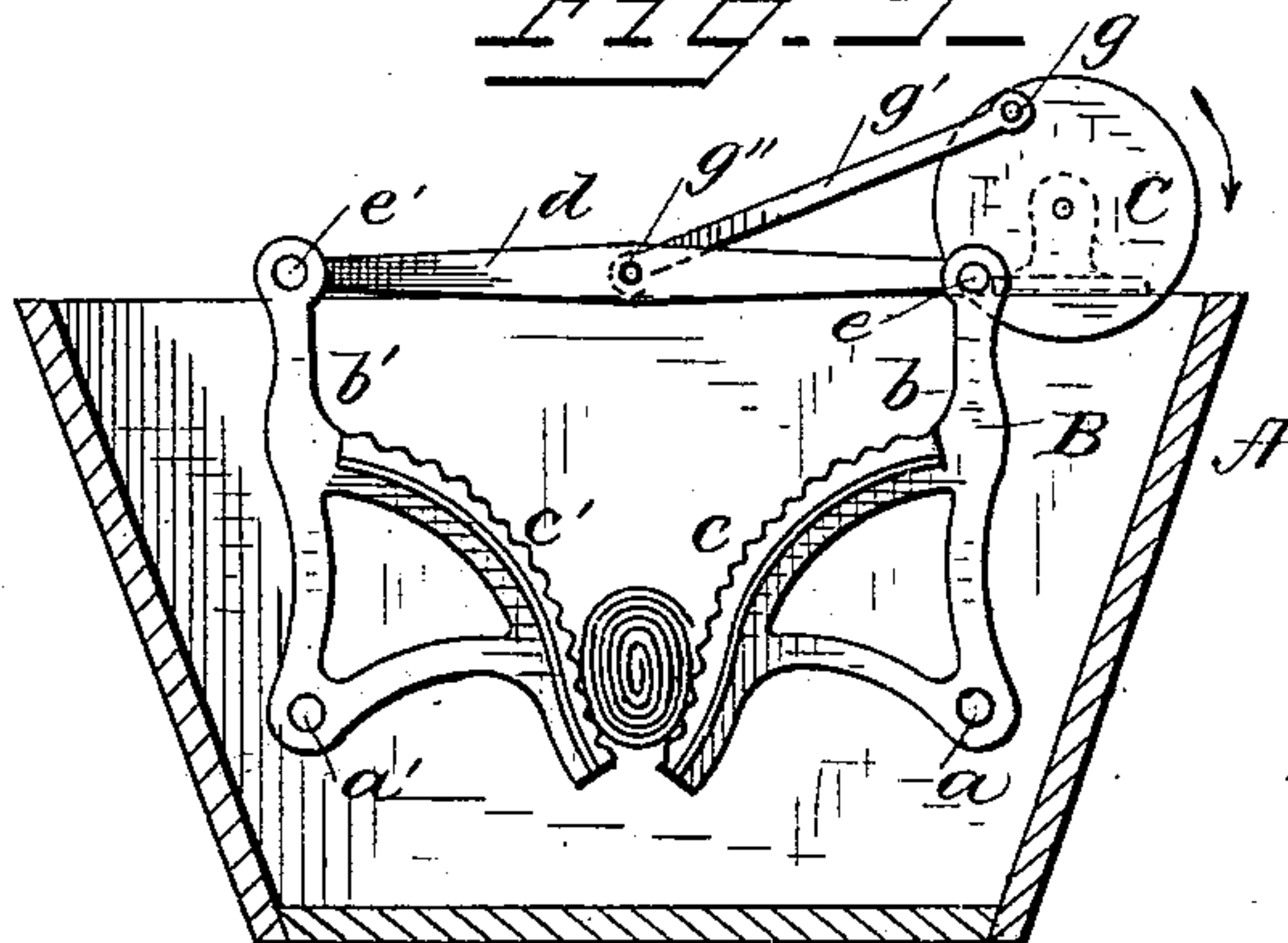


Fig. 5



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# UNITED STATES PATENT OFFICE.

JAMES S. TAYLOR, OF DANBURY, CONNECTICUT.

SCALDING NAPPED HATS AND SIZING OR FELTING HAT AND OTHER FABRICS.

SPECIFICATION forming part of Letters Patent No. 277,081, dated May 8, 1883.

Application filed September 21, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES S. TAYLOR, of Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in the Art of Scalding Napped Hats, and Sizing or Felting of Hat or other Fabrics; of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates, first, to a process which is intended to improve by mechanical means operations heretofore imperfectly conducted by hand and attempted by machinery.

The process consists, first, in uniting the nap to the body felt after the nap has been applied thereto by sticking either by hand or machinery, by rolling the felts, several being wrapped together in the cloth ordinarily used alternately in opposite directions, without the exertion of such force as will compress the goods beyond the limit of compression due to gravity, the effect being to alternately roll and partly unroll the felts, and in so doing, by the aid of scalding water, to cause the rapid and perfect unison of the nap with the felt.

A modification of the process consists in subjecting the roll of felts while exposed to or partly immersed in hot water and being rolled alternately in opposite directions to the action of a surface or surfaces rotated only by the felts, which surface or surfaces may exert either a yielding or a fixed pressure on the felts during rotation, as hereinafter specified.

A further modification of the process consists in subjecting the roll of felts while exposed to or partly submerged in hot water and being rolled alternately in opposite directions to the action of a surface or surfaces positively rotated, as hereinafter specified.

The process, or either of its modifications, is applicable also to the sizing or felting of hat-bodies or other fabrics.

The invention relates, secondly, to an apparatus capable of conducting the process above referred to, as hereinafter fully described.

In the accompanying drawings, Figures 1, 2, and 3 are sectional end elevations of the machine, showing its parts in three different positions. Fig. 4 is a perspective view of a detail of the machine. Fig. 5 shows a modification in construction.

Similar letters of reference indicate corresponding parts.

Referring to Figs. 1, 2, and 3, A is a vat for containing hot water. Fixed in bearings at a suitable height from the bottom of the vat are shafts, *a a'*, upon which are mounted segmental rockers B B', each having an arm, *b b'*, arranged as shown. A rocker is placed at each end of each of the shafts *a a'*, and the two rockers of each shaft are united by a segment constituting a working-surface, (marked, respectively, *c* and *c'*.) The segments are preferably made of wood and longitudinally corrugated, ribbed, or fluted. The surfaces *c c'* may, if preferred, be diagonally corrugated, ribbed, or fluted. The arms *b* and *b'* of the rockers B and B', respectively, are connected by a link, *d*, united thereto by pins *e e'*.

C is a crank-wheel mounted on a shaft, *f*, in a bearing supported upon an upper edge or part of the tank A. The inner side of the crank-wheel C is provided with a crank-pin, *g*, to which a connecting-rod, *g'*, is attached, uniting by a pin, *g''*, with the center of the link *d*.

Fig. 1 shows the machine with the two rockers B B' occupying a central position, the crank-wheel C being at its upper center.

In operation, the felts, having had the naps stuck on them by hand or mechanical means, and having been rolled up in a cloth in the usual manner, are saturated with hot water and deposited in the open space unobstructed above, formed by the working-surfaces *c c'*, which are each concentric with the respective centers *a a'*. The position of the surfaces of the rockers B B' within the tank A may be such as to elevate the felts above the surface of the hot liquid or to partially submerge them. Rotary motion being given to the crank-wheel C in the direction of the arrow, the rockers are brought, on the crank reaching its forward center, to the position represented in Fig. 2, and the felts, resting in the opening between the surfaces *c c'*, without upper pressure, and compressed only by force of gravity or weight of the mass, are rolled in the direction of the wrap given to them by the workman. On the crank-pin *g* passing the forward center the reverse or unrolling action on the felts is begun, which is terminated as soon as the crank-pin reaches the point at which it is shown in Fig. 3. The operation is continued for a short time,



and is found much more expeditious and effective than the hand method, with which it is substantially the same so far as relates to the rolling backward and forward of the felts or rolling and unrolling action. My method, however, has the advantage unattainable in the hand method of performing this operation without pressure on the felts and fibers other than that due to gravity. It is found that the delicate and uniform operation thus performed is more effective in causing the fibers to unite with the felt than the hand method, or methods by machinery in which the felts are revolved, without the exertion of pressure thereon, on open rollers rotating in one direction.

The operation is the same where goods are to be ordinarily sized or felted, the invention, as above stated, not being confined to scalding napped hats.

Fig. 5 shows a modification in the construction of the machine, the shape of the rockers B B' being as shown, instead of segments of circles, as in the other figures. The construction in Fig. 5, by reason of the lower reverse curvature of the rockers, provides a pocket for holding the felts as the rockers are vibrated. If preferred, only one rocker may be used, the opposite part being stationary; but the best results are produced by rocking both parts.

As thus far described, the felts are operated without the exertion of any force tending to compress them beyond that exerted by gravity. D D' are workers extending transversely across the vat, which during the operation impinge upon two points in the roll of felts, which workers are rotated only by the felts, being without gearing, and which may be in either fixed or spring or yielding bearings. The position of the workers allows the felts to be inserted within and removed from the space between the rockers without changing the location of any part of the machine. If preferred, however, a single worker may be placed across the top of this space in a position to impinge against the upper surface of the roll of felts, in which case the worker would be placed in bearings, allowing it to be removed for the insertion and removal of the felts.

The worker or workers may be positively rotated by gearing; but I find that the operation is more satisfactory when the workers receive rotation only from the action of the goods.

Having described my invention, I claim—

1. In the manufacture of hats, the within-described process of alternately rolling the goods while exposed to hot water in opposite directions without the exertion of any compressive force beyond that due to gravity alone, substantially as set forth.

2. In the manufacture of hats, the within-described process of rolling the goods while exposed to hot water alternately in opposite directions, and coincidentally subjecting the same to the separate action of a surface or surfaces rotated only by the goods, substantially as set forth.

3. In the manufacture of hats, the within-described process of rolling the goods while exposed to hot water alternately in opposite directions between oppositely-moving surfaces, and coincidentally subjecting the goods to the separate action of a positively-rotated surface or surfaces, substantially as set forth.

4. In a machine for scalding napped hats or for sizing or felting hats, the combination of segmental rockers and mechanism for rocking or vibrating them coincidentally in opposite directions, substantially as set forth.

5. In a machine for scalding napped hats or for sizing or felting hats, the combination of a vat, segmental rockers within the same, and mechanism for rocking or vibrating them coincidentally in opposite directions, substantially as set forth.

6. In a machine for scalding napped hats or for sizing or felting hats, the combination of reversely-curved rockers, forming a pocket for holding the felts, and mechanism for rocking or vibrating them coincidentally in opposite directions, substantially as set forth.

7. In a machine for scalding napped hats or for sizing or felting hats, the combination of a vat, reversely-curved rockers for holding the felts, and mechanism for vibrating or rocking them coincidentally in opposite directions, substantially as set forth.

8. In a machine for scalding napped hats or for sizing or felting hats, a rocker and mechanism for vibrating or rocking the same, combined with an opposing rotative working-surface, substantially as set forth.

9. In a machine for scalding napped hats or for sizing or felting hats, a vat, a rocker within the same, and mechanism for vibrating said rocker, combined with an opposing stationary working-surface, substantially as set forth.

10. In a machine for scalding napped hats or for sizing or felting hats, segmental rockers and mechanism for rocking or vibrating them coincidentally in opposite directions, combined with one or more workers receiving rotation only from the revolutions of the felts, substantially as set forth.

11. In a machine for scalding napped hats or for sizing or felting hats, segmental rockers and mechanism for rocking or vibrating them coincidentally in opposite directions, combined with one or more workers positively rotated and adapted to impinge upon the felts, substantially as set forth.

12. In a machine for scalding napped hats or for sizing or felting hats, a vat, segmental rockers, and mechanism for rocking or vibrating them in opposite directions, combined with one or more revoluble workers adapted to impinge upon the felts, substantially as set forth.

13. In a machine for scalding napped hats or for sizing or felting hats, segmental rockers having opposing faces longitudinally or diagonally corrugated, ribbed, or fluted, combined with mechanism for vibrating said rockers coincidentally in opposite directions, substantially as set forth.



14. In the manufacture of hats, the within-described process of rolling the goods while exposed to the action of hot water alternately in opposite directions between roughened or  
5 undulating surfaces moving in opposite directions, substantially as set forth.

15. The rocker B, having the pivotal center *a*, and arm *b*, with the pin *e*, combined with the segmental working-surface *c*, substantially  
10 as set forth, and for the purposes specified.

In testimony whereof I have hereunto set my hand and seal this 12th day of August, 1882.

JAMES S. TAYLOR. [L. S.]

Witnesses:

E. M. BULKLEY,

F. T. HOYT.