

No. 705,107.

Patented July 22, 1902.

J. MARSHALL.  
HAT FORMING MACHINE.  
(Application filed Apr. 24, 1901.)

(No Model.)

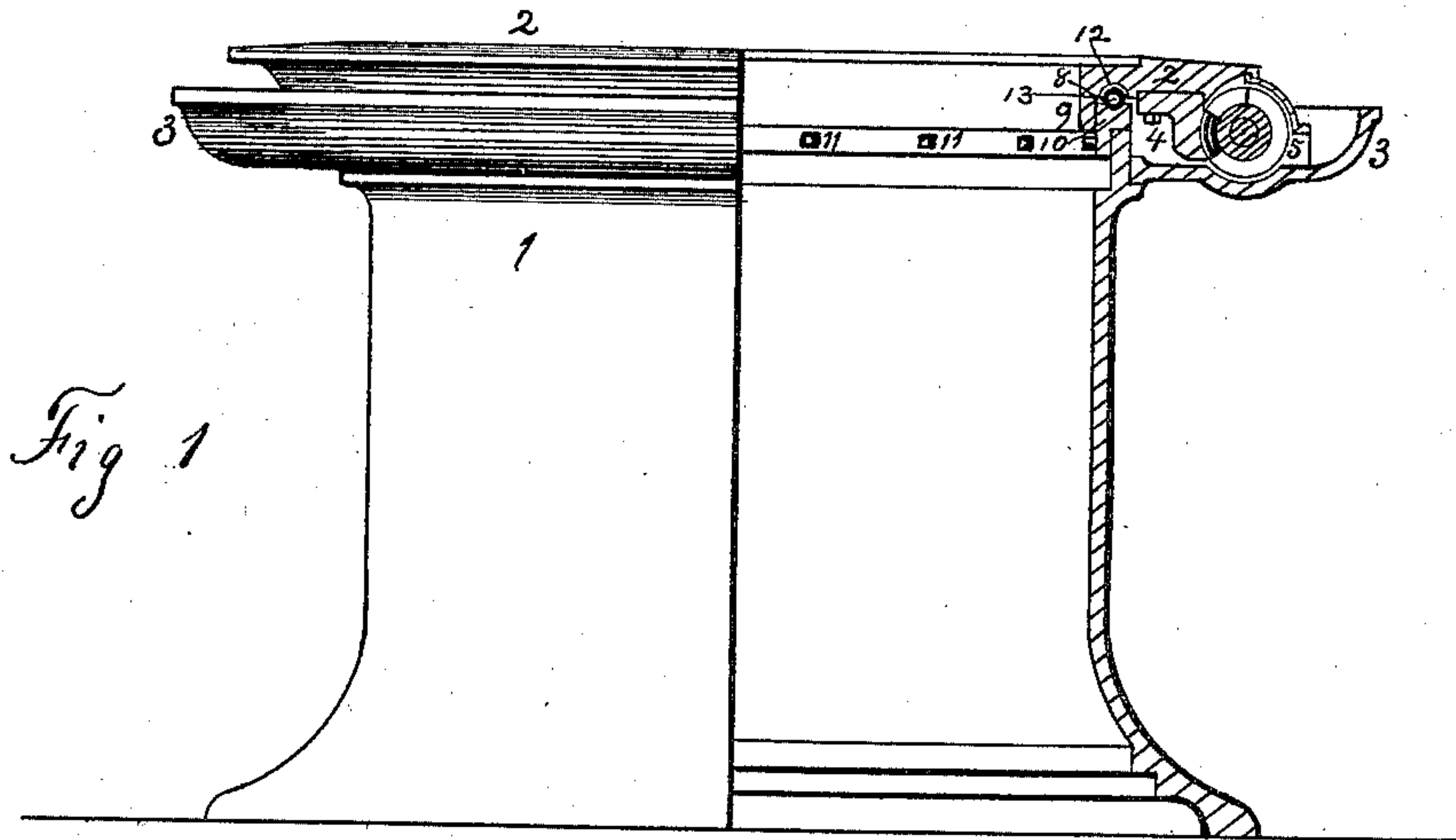


Fig 1

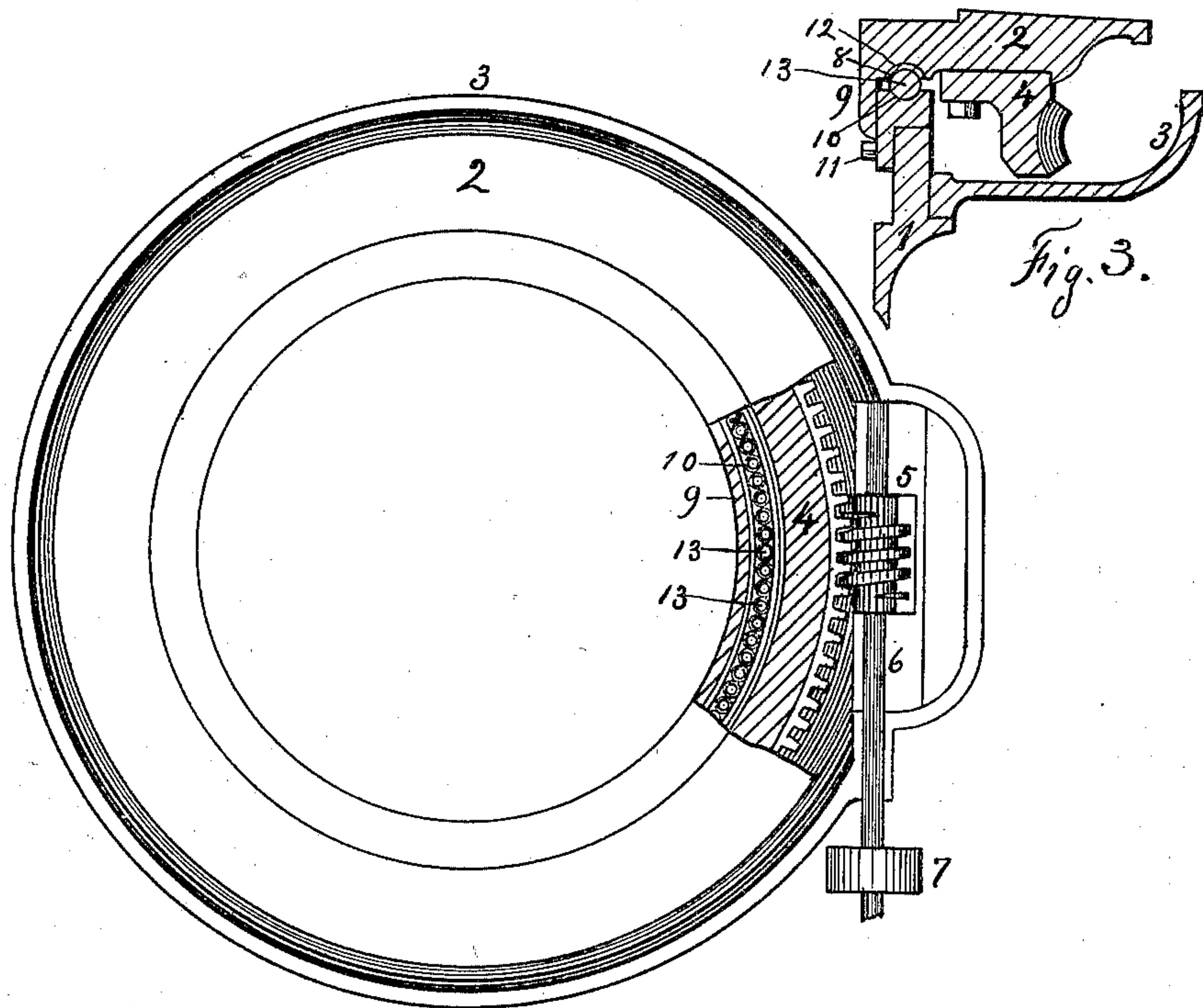


Fig 2

Fig. 3.

WITNESSES

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JOHN MARSHALL, OF FALL RIVER, MASSACHUSETTS.

## HAT-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 705,107, dated July 22, 1902.

Application filed April 24, 1901. Serial No. 57,320. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN MARSHALL, a citizen of the United States, and a resident of Fall River, in the county of Bristol and State of Massachusetts, have invented new and useful Improvements in Hat-Forming Machines, of which the following is a specification.

My invention relates to that portion of a hat-forming machine known as the "revolving turn-table," which carries the perforated cone over which the hat-bodies are formed and which revolves at high speed.

The object of my invention is to reduce the friction between the revolving turn-table and the supporting-frame upon which it rests by providing a roller-bearing without fixed axial centers having a forward movement, supporting the turn-table and revolving with it. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a vertical view of the machine in elevation and section, the bearings being spherical balls and the driving mechanism a worm and gear. Fig. 2 is a view of the same in plan, and Fig. 3 is an enlarged vertical section.

In all the figures like numbers relate to like parts.

The supporting-frame 1 of the turn-table 2 is composed of a substantial circular pot-casting having an annular ring 3 surrounding it, which incloses a worm-wheel 4, bolted to the under side of the turn-table 2. This worm-wheel is driven by the worm 5, recessed in a pocket in the annular ring, and by the shaft 6 and pulley-wheel 7, which constitute the driving-gear of the turn-table. In the under side of the turn-table I construct an annular semicircular recess 8 and provide a depending flange 9, which serves to hold and guide it in true circular relation to the supporting-frame. On the top of the supporting-frame I arrange a circular casting or forging 10 and secure it by bolts 11. This cap-piece is made separately in order that it may be made of much more durable metal than the supporting-frame. It constitutes

the horizontal bearing-surface, which carries the weight of the turn-table and has a vertical bearing-surface against the flange 9. In the upper surface of the cap-piece 10 I construct a semicircular annular recess, as shown, corresponding to the semicircular recess 8 in the under side of the turn-table, which recess 8 is provided with a hardened bushing 12, making its internal diameter the same as that of the recess in the cap 10, thus forming a circular annular passage between the supporting-frame and turn-table. This passage I fill with balls 13, made of the hardest metal obtainable, of such diameter as to properly roll in it and slightly part the turn-table and its supporting-frame, thus carrying all of its weight. The balls roll upon each other and when the turn-table is driven by the worm-gear have a continuous forward rolling movement within the circular channel. It will readily be seen that the lips of the two parts of this channel may approach each other so closely as to practically inclose and conceal the balls, also that the guiding-flange 9 completely shuts in the annular channel and the balls from any connection with the fur passing through the central part of the machine, and thus protects them and their path from being clogged by fur or dirt, which is a great desideratum in the construction of fur-hat-forming machines.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a hat-forming machine provided with a revolving turn-table, a supporting-frame and spherical balls operating in a circular annular channel between them to support said table and on which it revolves, the combination therewith of a worm-wheel bolted to the under side of the turn-table, and a worm attached to the supporting-frame for actuating said turn-table, and mechanism for operating the worm substantially as described and shown.

2. In a hat-forming machine the combination with a revolving turn-table and a supporting-frame having a circular annular passage arranged between them of a flange de-

pending from the inner circle of the turn-  
table, and bearing against the inner face of  
the supporting-frame, assisting to preserve  
the registry of the two parts of the circular  
5 passage, and closing the horizontal aperture  
between them on the inner side of the ma-  
chine, substantially as described and shown.

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

JOHN MARSHALL.

Witnesses:

BRONSON S. BURR,  
M. EMMET RYAN.