

W. R. LANDFEAR.
LATHES FOR TURNING BOBBINS.

No. 195,291.

Patented Sept. 18, 1877.

Fig. 2.

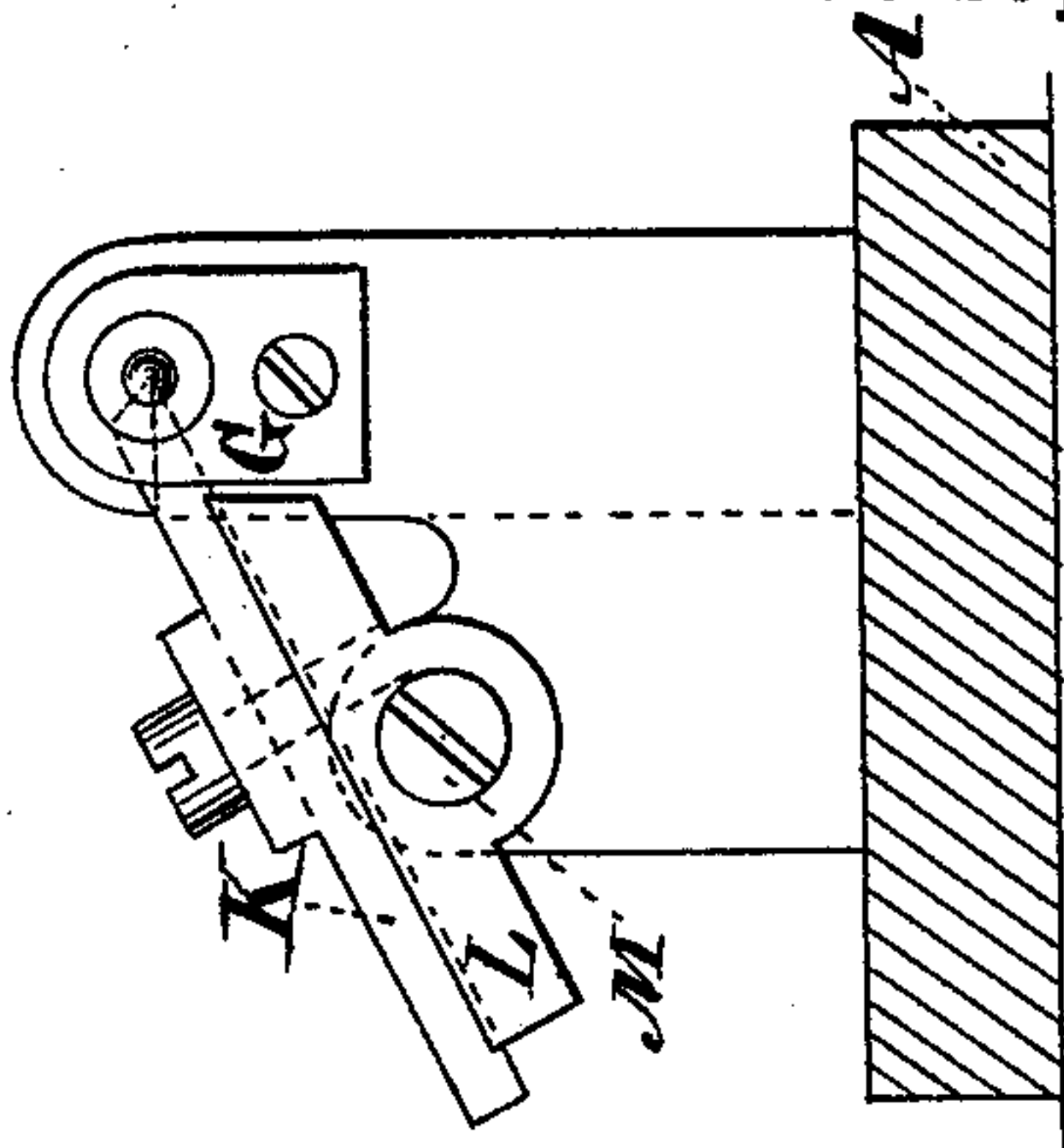
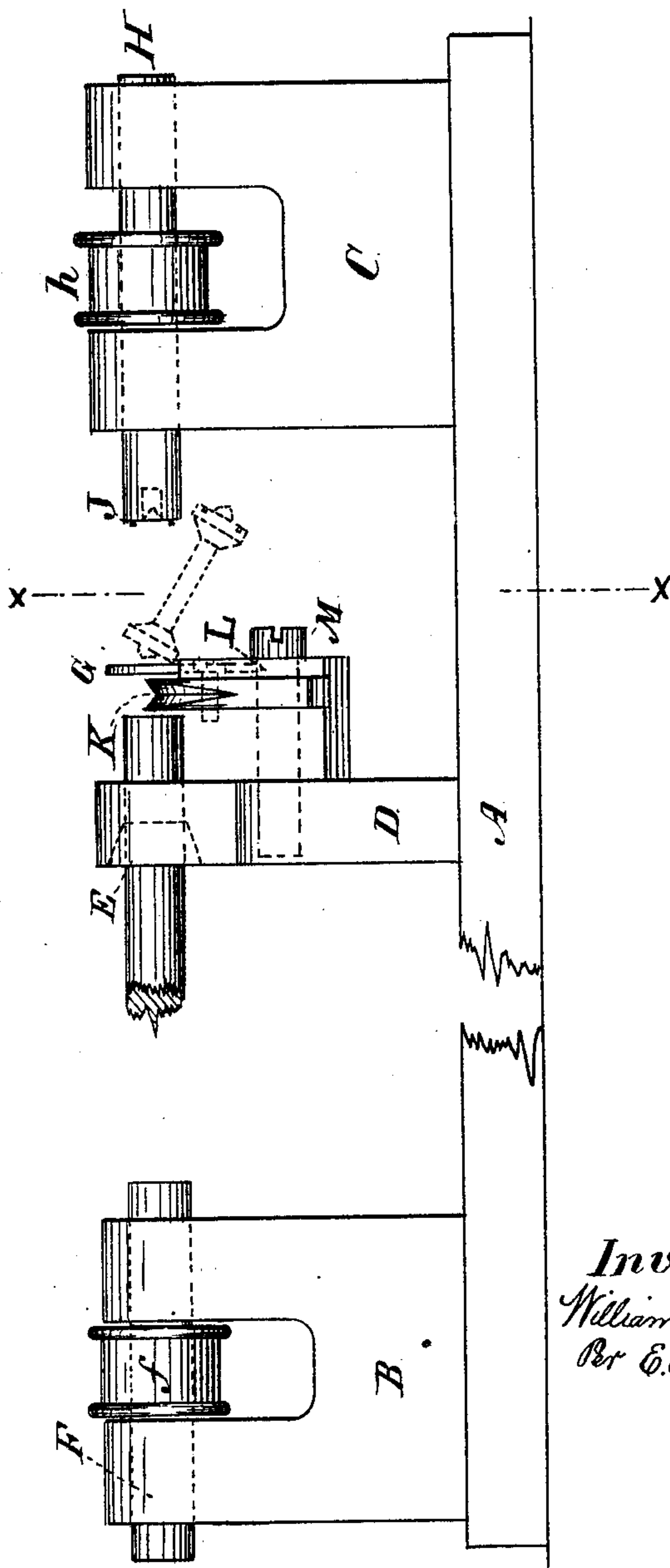


Fig. 1.



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IMPROVEMENT IN LATHES FOR TURNING BOBBINS.

Specification forming part of Letters Patent No. 195,291, dated September 18, 1877; application filed July 17, 1877.

To all whom it may concern:

Be it known that I, WILLIAM R. LANDFEAR, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Machines for Making Bobbins; and that the following is a full, clear, and exact description thereof, sufficient to enable those skilled in the art to which my invention appertains to make and use the same.

My invention is particularly adapted to machines for making bobbins for sewing-machine shuttles.

In the usual process employed in making bobbins for sewing-machine shuttles it is necessary to use two machines, one of which forms the barrel of the bobbin and the other forms the gudgeons upon which the bobbin rotates when in place in the shuttle.

The work, consisting of a rod or bar of wood, either round or square, is carried by a sleeve and spindle, which rotate it and feed it to the cutters. One of the cutters forms the barrel of the bobbin. Another cutter reduces the diameter of the wood between the bobbin thus formed and the portion from which the next bobbin is to be formed, and said reduced diameter is cut through transversely. The bobbin is then removed and placed in another machine, in which the gudgeons are formed by cutters moved up toward the ends of the bobbin from opposite directions. This involves considerable trouble and loss of time, as it is necessary, after the barrels have been formed by one machine, to place the bobbins in another machine to be finished by forming the gudgeons. Moreover, in the old process the gudgeons are sometimes eccentric, or one gudgeon is not in a right line with the other, so that the bobbins are caused to bind, or to fail to revolve accurately, when in place in the shuttles.

To obviate these and other difficulties experienced in the former process is the object of my invention; and to this end my invention consists in a novel construction, arrangement, and operation of devices for guiding and rotating the work, and of a device for forming the gudgeons on the bobbins, whereby the barrel is turned, the gudgeons formed, and the bobbin completely finished by one and the

same machine, and whereby the gudgeons are formed uniformly on all the bobbins, so as to insure their accurate operation when in place in the shuttles.

In carrying out my invention the cutter which forms the barrel of the bobbin and the sleeve and spindle which carry the work and feed it to the cutter may be of the usual or any other suitable description. So, also, may be the stationary and movable heads and their appurtenances.

The work, as it is rotated and fed to the cutters, passes through a stationary guide, which, if desired, may be provided with a cutter for giving a cylindrical form to the work before reaching the main cutters; or said guide may be simply a rest for the work, if the rod or bar of wood has been previously made of cylindrical form and of the required diameter. The work then passes through another stationary guide, in which is a circular opening of a diameter corresponding with that of the flanged portions or heads of the bobbin when finished. The work then comes in contact with the cutter, which forms the barrel. Said cutter may be similar in its construction and operation to those used in the ordinary process, and is automatically thrown into and out of contact with the work by cams or other suitable means.

As soon as the cutter has formed the barrel of the bobbin it is automatically withdrawn therefrom. The outer or free end of the bobbin is then engaged by a chuck, which is carried by a spindle revolving with exactly the same velocity as the work. This spindle is provided with means for imparting to it a longitudinally-reciprocating motion without interfering with its rotary motion, which means may consist of a cam-movement so arranged, by belts or gearing, with relation to the driving mechanism as to cause the spindle to advance toward and recede from the end of the bobbin at the exact time required, as herein-after described. When the chuck is engaged with the end of the bobbin the gudgeon-forming cutter is automatically thrown forward and into engagement with the work between the inner end of the bobbin just formed and the portion of the wood from which the next

bobbin is to be made. The cutting-edge of this cutter is shaped like the letter V or two sides of a triangle, and the result of its operation on the work is the forming, at one and the same time, of the inner gudgeon of the bobbin just made and the first gudgeon of the bobbin to be next made, which result is accomplished by cutting a V-shaped groove and continuing the same until the wood is entirely cut through and said two gudgeons are separated, whereupon the cutter is automatically withdrawn and thrown back, the chuck recedes from the outer end of the bobbin, and the bobbin, completely finished, drops of its own weight, and the above-described operation is repeated. During the operation of forming the gudgeons the outer end of the bobbin is supported and rotated by the chuck and the inner end is supported by the stationary guide. As soon as the gudgeons are formed and the chuck recedes the bobbin is allowed to drop from the stationary guide.

If desired, on the first commencement of the operation of the machine the gudgeon-forming cutter may be brought to bear upon the end of the work, so as to form the first gudgeon of the first bobbin.

The accompanying drawings illustrate a mode of carrying out my invention.

Figure 1 is a front view of a machine embodying my improvements; and Fig. 2 is a transverse vertical section of the same, taken in the line *xx* of Fig. 1.

A is the bed, B the stationary head, and C the movable head, of a machine for making bobbins. D is a stationary head or standard, in the upper portion of which is a guide, E, which may be provided with a cutter for giving a cylindrical form to the wood, or may be merely a rest for the work. F is a spindle, carrying a sleeve holding the work, and rotated by a belt passing around a pulley, *f*. This spindle is also provided with means for imparting to it a longitudinal motion, in order to feed the work to the cutters.

All of the above-mentioned parts may be similar to those used in ordinary machines for making bobbins.

G is a stationary guide, attached in any suitable manner to the stationary head or standard D. This guide consists of a plate having in its upper portion a circular opening corresponding with the diameter of the work and of the flanged portion or head of the bobbin after the barrel has been turned.

H is a spindle, having its bearings in the movable head C, and provided with a pulley, *h*, for the reception of a belt, by which it may be rotated at exactly the same speed as the spindle F. The spindle H has a longitudinally-reciprocating motion imparted to it by means of mechanism of any well-known or suitable description.

The head C need not necessarily be movable; but it may be desirable to have it so arranged, in order to provide for the making of

bobbins of different lengths, in which event it may be similar to the movable head of an ordinary lathe. The head C may be permanently stationary, and the spindle H have a longitudinal motion therein; or the head may have a reciprocating motion longitudinally of the spindle, and carry the spindle with it.

As here represented, the distance between the bearings of the spindle in the head C is sufficient to allow the pulley *h* to have ample play for the necessary longitudinally-reciprocating motion of the spindle H, and this motion may be imparted by means of a cam-movement or other suitable mechanism. (Not shown herein.)

The spindle H carries on its inner end a chuck, J, for engagement with the outer end of the bobbin, as hereinafter described.

The gudgeon-forming cutter K has a V-shaped cutting-edge, and is carried by a stock, L, attached by a pivot, M, to the stationary head or standard D, so as to allow it to oscillate in a direction transverse to the length of the bobbin and of the work. The cutter-stock has an oscillating motion imparted to it by means of a cam or other suitable device, (not shown herein,) so as to cause the cutting-edge of the cutter to be automatically thrown into and withdrawn from contact with the work at stated times, as hereinafter described.

The operation is as follows: The work held by the sleeve carried by the spindle F is, during its rotation, moved longitudinally and fed to the cutters by means of a screw-shaft or any other suitable mechanism. As the end of the rod or bar of wood emerges from the guide G the barrel-forming cutter is thrown into contact with the work, and forms the barrel of the bobbin, after which it is automatically withdrawn in the usual manner. The spindle H then advances toward the bobbin, and the chuck J engages with the outer end of said bobbin, and, as said spindle H and chuck J revolve at the same speed as the spindle F, the revolution continues as before. The gudgeon-forming cutter is now thrown into engagement with the portion of the work lying between the guide G and the rest E, and the V-shaped cutting-edge operates on the wood so as to form a V-shaped groove; and the operation is continued until the wood is entirely cut through and the second or inner gudgeon of one bobbin and the first or outer gudgeon of the next bobbin are formed and the finished bobbin separated from the remaining portion of the wood. The gudgeon-forming cutter is then withdrawn and withheld, so as to allow the work to be fed along, the chuck J recedes from the finished bobbin, so as to allow it to drop from the guide G, and the former operation is repeated.

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

1. In a machine for making bobbins, a stationary guide for supporting the inner end of

the bobbin during the operation of forming the gudgeons, substantially as herein described.

2. In combination with a bobbin-making machine in which the barrel is turned, the gudgeons formed, and the bobbin completely finished in one and the same machine, a rotating and longitudinally-reciprocating chuck and spindle or chuck holder, arranged to advance toward and support the bobbin during the operation of forming the gudgeons, and to recede therefrom to allow the finished bobbin to drop, substantially as herein described.

3. In combination with a bobbin-making machine in which the barrel is turned, the gudgeons formed, and the bobbin completely finished in one and the same machine, a cutter for simultaneously forming the second gudgeon of one bobbin and the first gudgeon of the next bobbin, substantially as herein described.

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