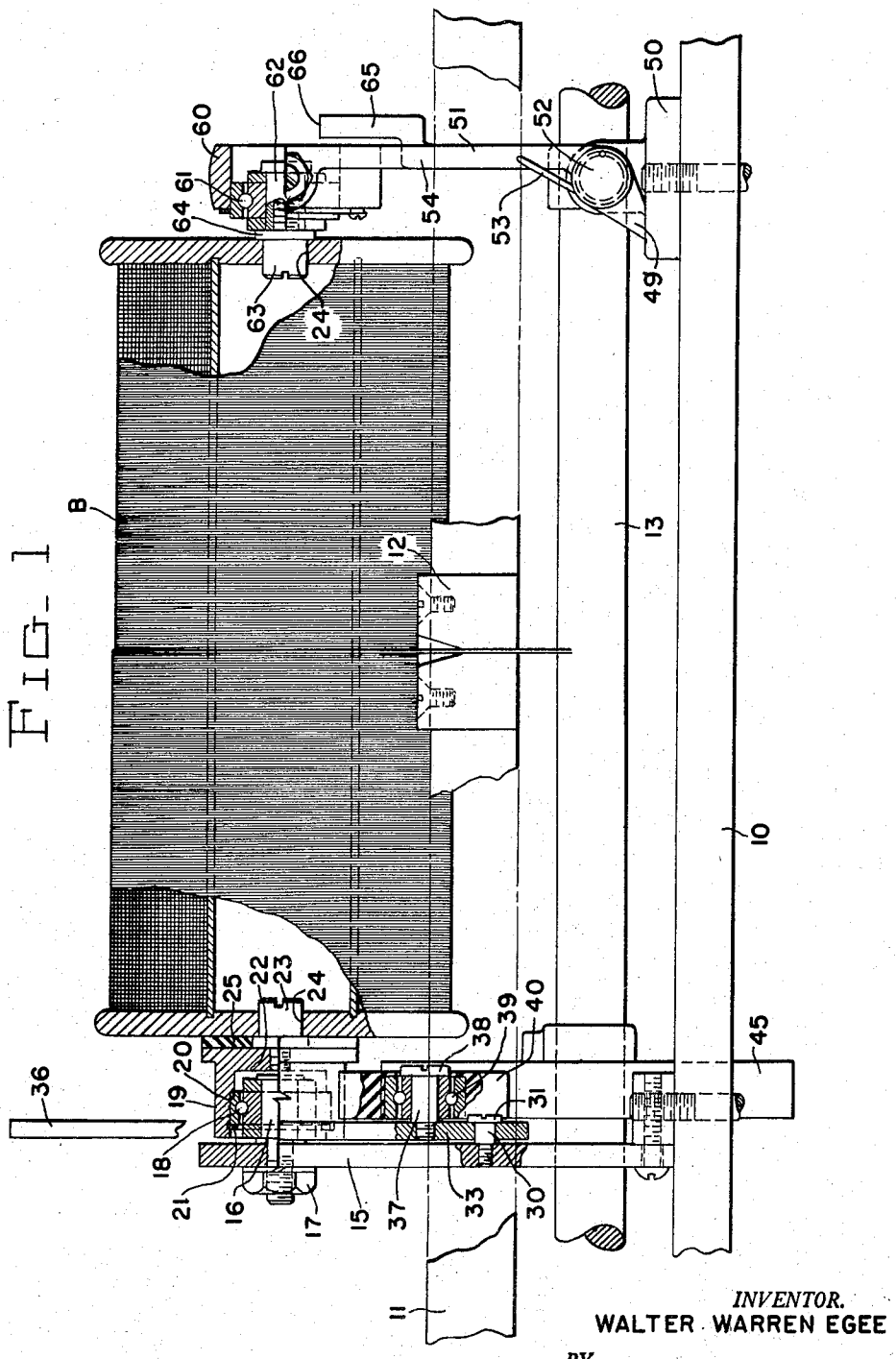
Aug. 25, 1953 W. W. EGEE 2,650,035

BOBBIN DRIVE FOR WINDING MACHINES

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FIG. 1




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FIG. 2

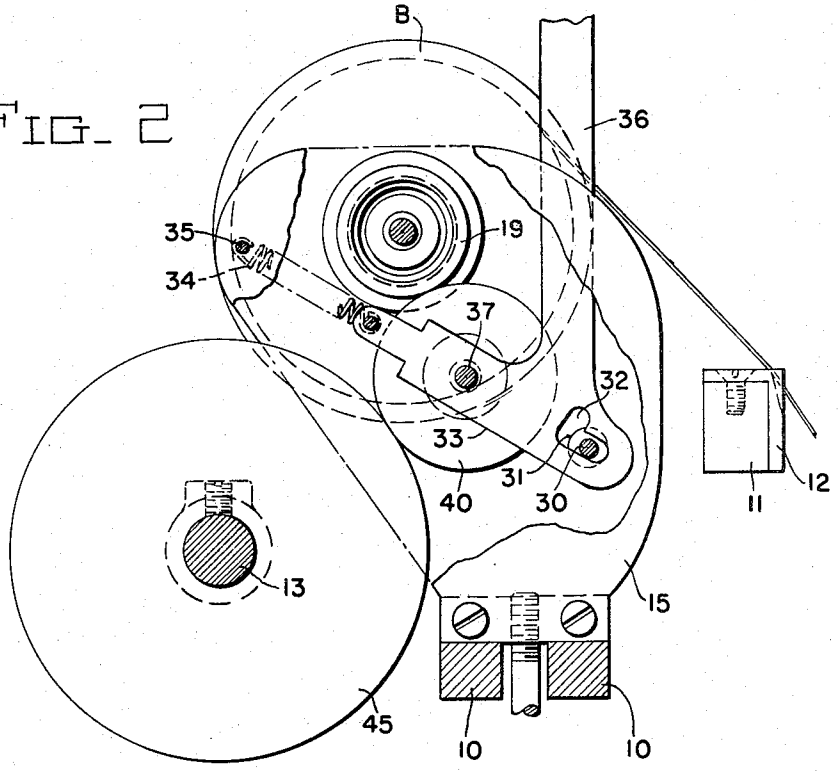



FIG. 3

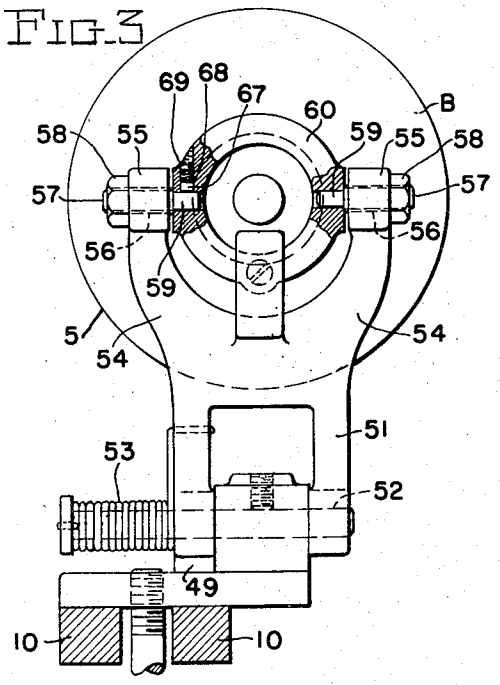
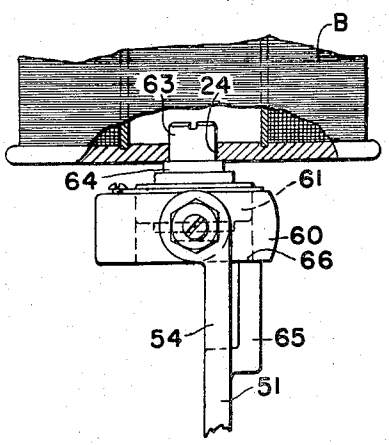



FIG. 4




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Patented Aug. 25, 1953 2,650,035

# UNITED STATES PATENT OFFICE

2,650,035

## BOBBIN DRIVE FOR WINDING MACHINES

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Application December 8, 1952, Serial No. 324,689

11 Claims. (Cl. 242—18)

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This invention relates to bobbin drives for winding machines.

Various driving mechanisms have heretofore been proposed for rotating bobbins for winding but none of these have been wholly satisfactory.

It has heretofore been proposed to drive bobbins on fixedly mounted centers but the driving mechanism heretofore available has left much to be desired, particularly because the bobbin cannot readily be held free from rotation at the commencement of winding, or upon the resumption of winding after an interruption, or when the bobbin is filled.

In my prior application for Bobbin Drive for Winding Machines, filed March 29, 1951, Serial No. 218,225, there is shown an individual bobbin drive for a winding machine operating on fixed centers but no other satisfactory separate and individual bobbin drive for machines of this type has heretofore been proposed. This structure, however, involves certain complexities of manufacture which have been overcome with the bobbin drive of the present invention.

It is the principal object of the present invention to provide an improved bobbin drive for winding machines operating on fixed centers.

It is a further object of the present invention to provide an improved bobbin drive for winding on fixed centers in which, if desired, the bobbin will readily spin on the bearings at the fixed centers for winding.

It is a further object of the present invention to provide an improved bobbin drive for winding on fixed centers in which, if desired, the bobbin can be easily stopped and when stopped will be carried on centers both of which are stopped.

It is a further object of the present invention to provide a bobbin drive for winding on fixed centers in which the bobbin may be rotated freely on its centers when stopped.

It is a further object of the present invention to provide a bobbin drive for winding on fixed centers from which the bobbin is readily removable.

It is a further object of the present invention to provide a bobbin drive for winding on fixed centers in which the bobbin can be readily swung to any desired upwardly disposed position and the bobbin support maintained in that position and available for reloading.

It is a further object of the present invention to provide a bobbin drive for winding on fixed centers in which large bearings can be employed at both ends of the bobbin so that the driving mechanism has an exceedingly long life.

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Other objects and advantageous features of the invention will be apparent from the specification and claims.

The nature and characteristic features of the invention will be more readily understood from the following description taken in connection with the accompanying drawings forming part hereof, in which:

Figure 1 is a front elevational view of a bobbin drive in accordance with the invention, parts being broken away to show the details of construction;

Fig. 2 is an end elevational view, as seen from the left of Fig. 1, parts being broken away to show the details of construction;

Fig. 3 is an end elevational view, as seen from the right of Fig. 1, parts being broken away to show the details of construction; and

Fig. 4 is a fragmentary view of a portion of the right hand end of Fig. 1, showing the bobbin in upright or upwardly disposed position.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

Referring now more particularly to the drawings, a pair of horizontal parallel rails 10 are shown as a fragmentary portion of the frame of a winding machine, together with a horizontal traverse bar 11 having mounted thereon and movable therewith, for each bobbin to be wound, a yarn or strand guide eye 12, and a horizontal drive shaft 13, extending parallel to the rails 10. The traverse bar 11 and the shaft 13 are actuated in any desired manner common to winding machines.

At a plurality of predetermined locations on the rails 10, dependent upon the size and capacity of the winding machine, and for each bobbin B to be wound, an end plate 15 is provided, rigidly secured to the rails 10.

The end plate 15 has a stub shaft 16 fixedly mounted therein and held in position by a nut 17. Fixedly mounted on the stub shaft 16 is the inner race of a ball bearing 18, the outer race of which is in engagement with a hollow cylindrical driving sleeve 19. The bearing 18 and sleeve 19 are preferably held in assembled relation and in engagement with an interior shoulder 20 by an expansible split ring 21. The sleeve 19 has a transversely extending end wall 22 within which

a bobbin supporting pin 23 is mounted, in axial alinement with the stub shaft 16, for engagement within one of the central end openings 24 of the bobbin B. A resilient ring or facing 25, of rubber or the like, is provided on the exterior of the wall 22 for engagement by the end disc of the bobbin B.

The end plate 15 has a pin 30 mounted thereon, with an enlarged head 31, for the reception of a slotted portion 32 at one end of a control arm 33. It will be noted that the slotted portion 32 is of substantially L-shape to permit the sliding of the arm 33, as permitted by the longitudinal branch of the slotted portion 32, or for holding the arm 33 with the pin 30 engaged in the upwardly extending branch of the slotted portion 32. At the opposite end of the control arm 33, a tension coil spring 34 is connected, the other end of the spring 34 being connected to a pin 35 on the end plate 15. It will be noted that the spring 34 tends to urge the arm 33 inwardly or rearwardly unless prevented by the engagement of the pin 30 in the upwardly extending branch of the slotted portion 32.

An upwardly extending arm 36, rigidly connected to the arm 33, may be provided for manual positioning of the arm 33.

The arm 33 has fixedly mounted thereon, preferably in upwardly offset relation to the line connecting the centers of the pins 30 and 35, a shaft 37 with an enlarged head 38, for the reception of the inner race of a ball bearing 39, the outer race having a cylindrical rim 40 thereon, of resilient material, and preferably of rubber, cork, a mixture of rubber and cork, or other similar material. The rim 40 is in driving alinement with the sleeve 19.

The shaft 13, for each bobbin B to be wound, and in driving alinement with the rim 40, has a driving pulley 45 secured thereto for rotation by the shaft 13.

It will be noted that with the arm 33 in a rearwardly impelled position, urged by the spring 34, the rim 40 simultaneously engages the periphery of the driving pulley 45 and the periphery of the driving sleeve 19 for imparting a rotary movement to the supporting pin 23 and the facing 25. By a manual manipulation of the arm 33, the rim 40 while out of engagement with the pulley 45 may be engaged with the periphery of the driving sleeve 19 for braking.

It will also be noted that with the arm 33 retracted and with the upwardly extending branch of the slotted portion 32 in engagement with the pin 30 the arm 33 is held in retracted position, the rim 40 is out of engagement with both the driving pulley 45 and the sleeve 19.

With the arm 33 retracted, the supporting pin 23 is accordingly completely free from any rotating force, may be readily rotated manually by rotation of the bobbin B and may be readily stopped at the desired position.

At the opposite end of each bobbin B, a base bracket 50 is secured to the rails 10 and has an upwardly extending bifurcated supporting bracket 51 carried thereon by a pin 52, a spring 53 being provided for normally urging the upper end of the bracket 51 towards the end plate 15. The bracket 51 has a foot 49 which abuts against the base bracket 50 and limits the movement of the bracket 51 as urged by the spring 53.

The bracket 51 has spaced upwardly extending arms 54 at the upper termini of which alined cylindrical supporting blocks 55 are mounted. The blocks 55 have axially alined threaded openings 56 within which pivot pins 57 are mounted,



nuts 58 being provided on the outer ends of the pins 57 for holding the pins 57 in position. The pins 57 have inward extensions 59 which serve as pivotal supports for a bearing supporting ring 60. The ring 60 has mounted therein the outer race of a ball bearing 61, the inner race having a supporting pin 62 carried therein. The pin 62 has a bobbin mounting pin 63 axially secured thereto for engagement within one of the central end openings 24 of the bobbin B, the pin 63 having a shoulder 64 for abutment against the outer end face of the bobbin B.

The bracket 51 has a struck out portion 65 with an upwardly facing end terminal 66 which serves as an abutment for the ring 60, upon separation of the bobbin B from engagement with the supporting pin 23, and upward swinging of the bobbin support around the pivot pins 57.

In order to restrain the undesired free swinging movement of the ring 60, the bearing 61 and the pins 62 and 63 with a bobbin B mounted thereon, a friction brake may be provided in the ring 60 bearing on one of the pin extensions 59 and for this purpose a leather plug 67 may be employed with which a compression spring 68 is in engagement, an adjustable screw plug 69 permitting of adjustment of the friction.

The mode of use of the bobbin drive in accordance with the invention will now be pointed out.

The drive shaft 13 is rotated and the traverse bar 11 is continuously reciprocated in any desired manner. The rotation of the shaft 13 is effective for continuously driving the pulley 45.

In the normal non-operating position of the bobbin drive, the arm 33 will be held forwardly with the upwardly extending branch of the slotted portion 32 in engagement with the pin 30. The bobbin mounting pin 63 may be readily swung upwardly, if not already in that position, and a bobbin engaged with one of its end openings 24 on the pin 63 and in engagement with the shoulder 64. The bobbin may then be swung downwardly, the supporting bracket 51 being moved to the right to permit the engagement of the opening 24 at the other end of the bobbin on the bobbin mounting pin 23. The spring 53 urges the bracket 51 and the pin 63 towards the pin 23 and by reason of the pivotal mounting of the ring 60 and the bearing 61, alinement of the pins 23 and 63 is readily achieved and maintained. It will be noted that in this position the bobbin is supported completely free for manual rotation if desired.

When it is desired to rotate the bobbin B, the arm 33 is released and is urged rearwardly by the spring 34 so that the periphery of the rim 40 is brought into and held in driving engagement with the sleeve 19 and with the periphery of the driving pulley 45. Yarn supplied through the guide eye 12 on the reciprocating traverse bar 11 is supplied to the bobbin B for winding.

If it is desired to discontinue winding, the arm 33 is retracted forwardly and latched and held with the upward branch of the slotted portion 32 engaging the pin 30 and with the rim 40 out of engagement both with the driving pulley 45 and the sleeve 19. The bobbin will then come to rest, or may be stopped manually if desired, or a braking action may be effected by manipulation of the rim 40 in engagement with the sleeve 19 while out of engagement with the driving pulley 45. The bobbin B when filled, may be removed by a reversal of the operations for initially placing it in position.

With a plurality of bobbins operated with drives as heretofore described, the stopping of one bobbin, for any cause, does not interfere with the continued winding on other bobbins.

I claim:

1. A bobbin winding machine comprising a frame, a rotatable shaft extending longitudinally of said frame, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being movable axially of the bobbin, said one of said supporting members having a freely rotatable sleeve portion, and a rotatable member engageable with the periphery of said sleeve portion driven by said shaft.

2. A bobbin winding machine comprising a frame, a rotatable shaft extending longitudinally of said frame and having a driving pulley thereon, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including freely rotatable supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being movable axially of the bobbin, said one of said supporting members having a freely rotatable sleeve portion, a movable arm supported by said frame, and a rotatable member carried by said arm and simultaneously engageable with said driving pulley and the periphery of said sleeve portion for rotating said one of said supporting members.

3. A bobbin winding machine comprising a frame, a rotatable shaft extending longitudinally of said frame and having a driving pulley thereon, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being movable axially of the bobbin, said one of said supporting members having a freely rotatable sleeve portion, a movable arm, a resilient member for urging said arm in one direction, releasable holding means for said arm, and a rotatable member pivotally mounted on said arm and simultaneously engageable with said driving pulley and the periphery of said sleeve portion for rotating said one of said supporting members.

4. A bobbin winding machine comprising a frame, a rotatable shaft extending longitudinally of said frame and having a driving pulley thereon, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including freely rotatable supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being resiliently urged axially of the bobbin, said one of said supporting members having a freely rotatable sleeve portion, a movable arm, a resilient member for urging said arm in one direction, releasable holding means for said arm including a slot in said arm engageable with a pin on said frame, and a rotatable member pivotally mounted on said arm and simultaneously engageable with said driving pulley and the periphery of said sleeve portion upon release of said holding means for rotating said one of said supporting members.



5. Driving mechanism for bobbin winders comprising a rotatable shaft having a pulley thereon for each bobbin to be wound, freely rotatable supporting members for each of the ends of the bobbin, one of said supporting members having a peripheral cylindrical driving face, and a rotatable member movable into simultaneous engagement with said pulley and said driving face for rotating the bobbin.

6. Driving mechanism for bobbin winders comprising a rotatable shaft having a pulley thereon for each bobbin to be wound, freely rotatable supporting members for each of the ends of the bobbin, one of said supporting members having a peripheral cylindrical driving face, an arm, a resilient member for impelling said arm in one direction, and a rotatable member carried by said arm and movable into simultaneous engagement with said pulley and said driving face for rotating the bobbin.

7. Driving mechanism for bobbin winders comprising a rotatable shaft having a pulley thereon for each bobbin to be wound, freely rotatable supporting members for each of the ends of the bobbin, one of said supporting members having a peripheral cylindrical driving face, a control arm, a resilient member for impelling said arm in one direction, releasable holding means for said arm, and a rotatable member carried by said arm and movable upon release of said holding means into simultaneous engagement with said pulley and said driving face for rotating the bobbin.

8. A bobbin winding machine comprising a frame, a rotatable shaft extending longitudinally of said frame, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including freely rotatable supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being movable axially of the bobbin, means for rotating said one of said supporting members, said other of said supporting members having a bobbin engaging pin, a bearing for said pin, and a pivotal mounting member for said bearing for swinging movement of said bearing and said pin.

9. A bobbin winding machine comprising a frame, a rotatable shaft extending longitudinally of said frame, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including freely rotatable supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being movable axially of the bobbin, means for rotating said one of said supporting members, said other of said supporting members having a bobbin engaging pin, a bearing for said pin, and a horizontal pivotal mounting member for said bearing for upward swinging movement of said bearing and said pin.

10. A bobbin winding machine comprising a

frame, a rotatable shaft extending longitudinally of said frame, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including freely rotatable supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being movable axially of the bobbin, means for rotating said one of said supporting members, said other of said supporting members having a bobbin engaging pin, a bearing for said pin, a horizontal pivotal mounting member for said bearing for upward swinging movement of said bearing and said pin, and a member for limiting the pivotal movement of said mounting member.

11. A bobbin winding machine comprising a frame, a rotatable shaft extending longitudinally



of said frame, a traverse bar movable parallel to said frame and having a yarn guiding eye for the bobbin to be wound, means for rotatably supporting the bobbin at a fixed location with respect to said frame, said means including freely rotatable supporting members for the ends of the bobbin, one of said supporting members being at a fixed location and the other of said supporting members being movable axially of the bobbin, means for rotating said one of said supporting members, said other of said supporting members having a bobbin engaging pin, a bearing for said pin, a horizontal pivotal mounting member for said bearing for upward swinging movement of said bearing and said pin, and braking means for restraining said upward swinging movement.

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No references cited.