G. A. LAMBERT.

VEHICLE SHAFT FORMING APPARATUS.

APPLICATION FILED NOV. 5, 1909. RENEWED NOV. 14, 1910.

995,688. Patented June 20, 1911.

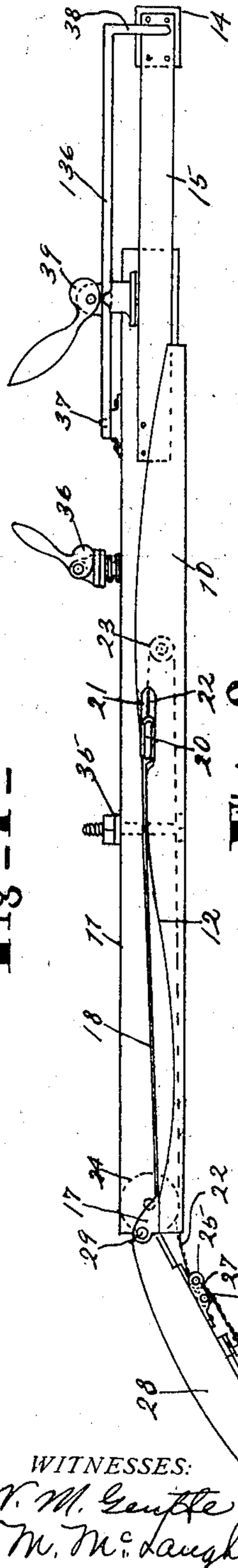

Fig. 1.

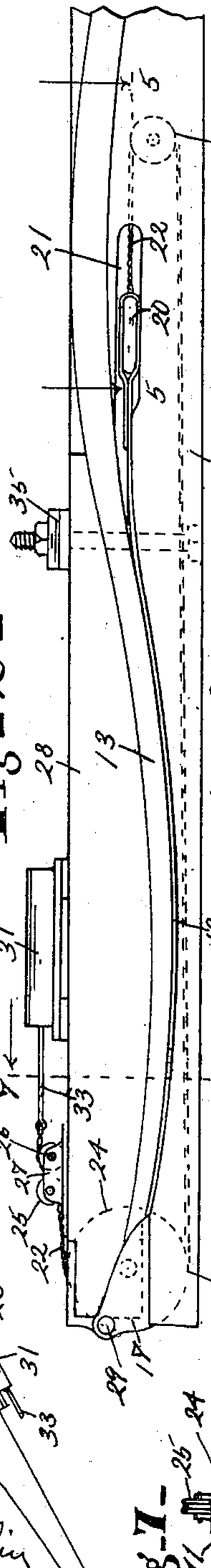

Fig. 2.

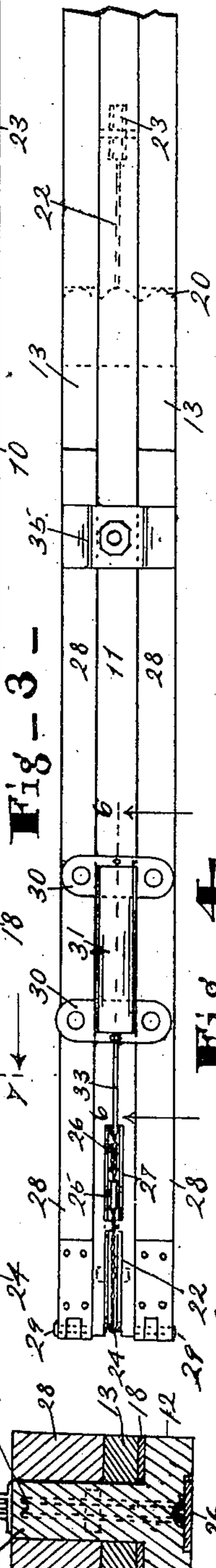

Fig. 3.

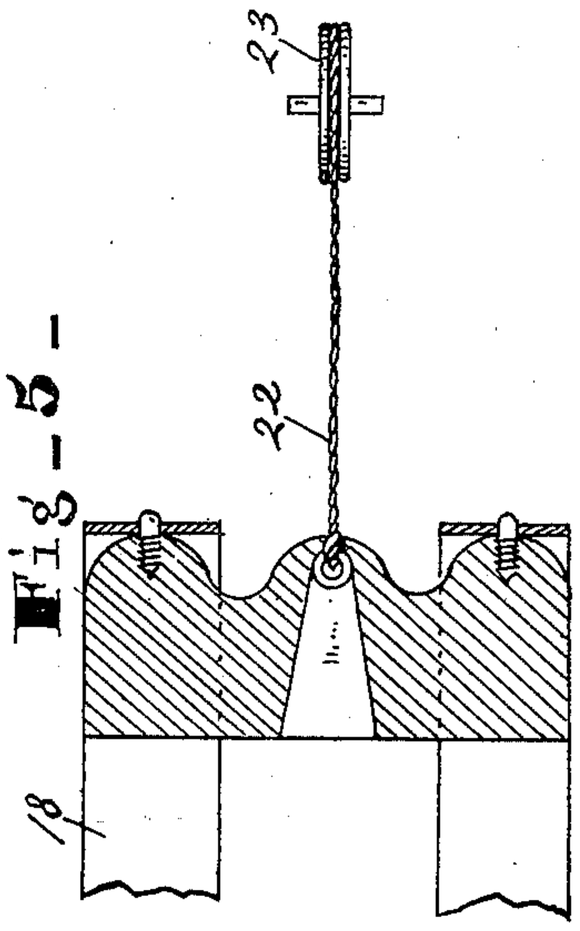

Fig. 5.

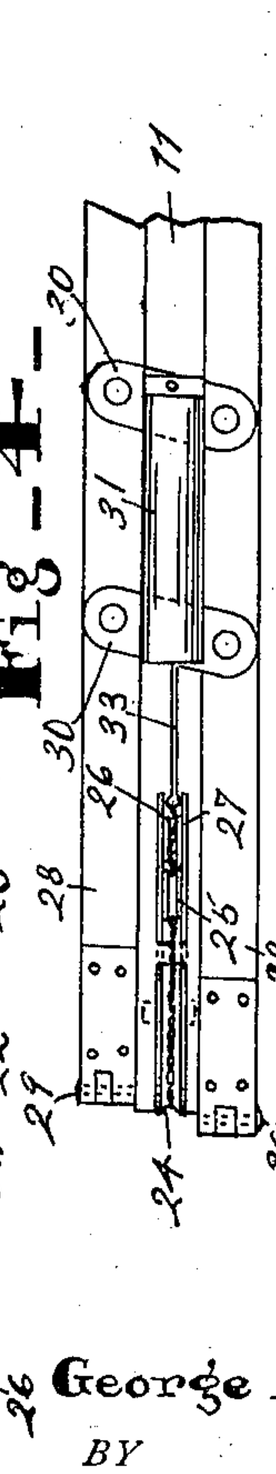

Fig. 4.

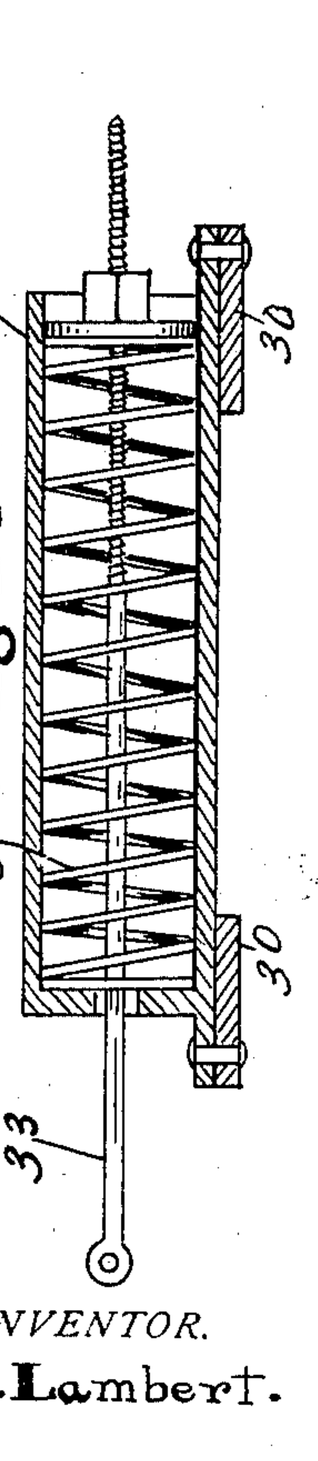

Fig. 6.

Fig. 7.

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VEHICLE-SHAFT-FORMING APPARATUS.

995,688. Specification of Letters Patent. **Patented June 20, 1911.**

Application filed November 5, 1909, Serial No. 526,413. Renewed November 14, 1910. Serial No. 592,328.

To all whom it may concern:

Be it known that I, GEORGE A. LAMBERT, of Anderson, county of Madison, and State of Indiana, have invented a certain new and useful Vehicle-Shaft-Forming Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

The object of this invention is to provide an improved means for upsetting the forward ends of vehicle shafts and prevent the partial breaking thereof during the bending process, and particularly to arrange means for upsetting a pair of shafts simultaneously that automatically equalizes the upsetting pull on the two shafts in case they should vary in length or density of growth.

The nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Figure 1 is a side elevation of the device before use. Fig. 2 is a side elevation of a portion thereof while the shafts are being upset and bent. Fig. 3 is a plan view of what appears in Fig. 2. Fig. 4 is a plan view of the left-hand part of Fig. 3 showing the parts in different positions from that shown in Fig. 3. Fig. 5 is a section on the line 5—5 of Fig. 2. Fig. 6 is a section on the line 6—6 of Fig. 3. Fig. 7 is a section on the line 7—7 of Fig. 2.

In detail, a frame block 10 is provided with a central upward extension 11 longitudinally thereof, on each side of which there is a ledge 12 upon which a vehicle shaft 13 is placed to be upset. The upper surfaces of the ledges 12 are curved to agree with the desired curvature of the shaft when upset. The rear end of the shaft or heel when put in place abuts against the heel plate 14 on the end of the strap 15 that is secured to the frame 10, said plate being set into said frame in a vertical position, as shown in Fig. 1. The other end of the shaft fits in the hollow frame 17 resting upon the ledge 12 of the base frame 10 and secured to the end of a brace strap 18. Said brace strap 18 lies over and above the ledge 12 and at its other end is connected with the block 20 that extends horizontally through a slot 21 loosely. The two straps 18 on opposite sides of the device are caught over the opposite ends of the block 20, and said block is intermediately attached to the cable 22 that passes over a pulley 23 and under the frame 10 to the other end thereof, and under a pulley 24 and between two pulleys 25 and 26 on a plate 27 pivoted at each side to a pair of upsetting levers 28. There is an upsetting lever 28 on each side of the central rib 11 and pivoted at 29 to each hollow plate 17, so that the upsetting lever can be turned upwardly from a position shown in Fig. 1 and over and down upon the strap 18 and shaft 13. Upon the pair of upsetting levers there are a pair of plates 30 pivoted at each end, as shown in Figs. 3 and 4, and they carry a spring casing 31, in which there is a spring 32, and an adjustable rod 33 which is fastened to the cable 22 in order to yieldingly hold the end of the cable.

The operation of the device is as follows: The parts are in the position as shown in Fig. 1. A pair of shafts are placed thereon, one on each ledge 12 at each side of the central extension 11 of the base frame, with one end abutting against the heel piece 14, and the other end resting in the hollow plate 17. The upsetting levers 28 are then operated, being thrown upwardly from the position shown in Fig. 1 and over and down upon the straps 18 and shafts, as shown in Fig. 2. The levers 28 are formed with concaved lower surfaces or "bellies" which bear down upon the straps 18 and shafts, and bend the shafts, as shown in Fig. 2, down upon the somewhat correspondingly formed surfaces of the ledges 12. The straps 18 are drawn tight by the cable 22 and levers 28 during this operation in order to prevent the shafts from breaking during the bending by the levers 28. The pivoting of the plates 27 and 30 to the two upsetting levers allows for a sufficient give and take in the movement of said parts. This permits a pair of shafts to be simultaneously upset by the device, although they may differ somewhat in length and density of growth in the upsetting action. The two hollow plates 17 will yield according to the strain or pull, as shown in Fig. 4. When the levers 28 are turned over and forced down upon the shafts, they are clamped in that position by clamps 35 and 36 that extend up centrally through the base frame and may be made in any form and constitute no part of this invention. There is also a retaining rod 136, with one end pivoted removably on pivots 37 secured upon

the central extension 11 of the frame, and with the other end turned down at 38 to engage the heel of the shaft after same is bent to the desired shape. This latter part of the construction plays no part in this invention but is used for bending the heel of the shaft.

What I claim as my invention and desire to secure by Letters Patent is:

1. A vehicle shaft forming apparatus including a base frame with surfaces upon which a pair of shafts are adapted to be placed and curved to conform with the desired curvature of the forward portion of the shafts, means connected with one end of said frame against which the heels of the shafts abut, independently movable plates against which the other ends of the two shafts abut, a pair of upsetting levers pivoted to said plates and adapted to be folded over upon the shafts for forcing them in the desired shape, the surfaces of said levers adjacent the shafts being shaped to conform with the surfaces on the base frame on which the shafts rest, means for clamping said upsetting and forming levers down upon the shafts and a connection between said straps and upsetting levers, whereby as the levers are folded over upon the shafts they will draw the straps and give said plates the upsetting movement.

2. A vehicle shaft forming apparatus including a base frame with surfaces upon which a pair of shafts are adapted to be placed and curved to conform with the desired curvature of the forward portion of the shafts, means connected with one end of said frame against which the heels of the shafts abut, independently movable plates against which the other ends of the two shafts abut, a pair of upsetting levers pivoted to said plates and adapted to be folded over upon the shafts for forcing them in the desired shape, the surfaces of said levers adjacent the shafts being shaped to conform with the surfaces on the base frame on which the shafts rest, straps connected at one end with said movable plates and extending over the surfaces of the base plate that receives the shafts so that the shafts when placed will lie upon said straps, means controlled by said upsetting levers, for drawing said straps and giving said plates the upsetting movement and means for clamping said upsetting levers down upon the shafts.

3. A vehicle shaft forming apparatus including a base frame with surfaces upon which a pair of shafts are adapted to be placed and curved to conform with the desired curvature of the forward portion of the shafts, means connected with one end of said frame against which the heels of the shafts abut, independently movable plates against which the other ends of the two shafts abut, a pair of upsetting levers pivoted to said plates and adapted to be folded over upon the shafts for forcing them in the desired shape, the surfaces of said levers adjacent the shafts being shaped to conform with the surfaces on the base frame on which the shafts rest, straps connected at one end with said movable plates and extending over the surfaces of the base plate that receives the shafts so that the shafts when placed will lie upon said straps, a block to each end of which the other ends of the straps are connected, a connection between said block and said levers whereby they can draw the block and straps and give said plates the upsetting movement and means for clamping said upsetting levers down upon the shafts.

4. A vehicle shaft forming apparatus including a base frame with surfaces upon which a pair of shafts are adapted to be placed and curved to conform with the desired curvature of the forward portion of the shafts, means connected with one end of said frame against which the heels of the shafts abut, independently movable plates against which the other ends of the two shafts abut, a pair of upsetting levers pivoted to said plates and adapted to be folded over upon the shafts for forcing them in the desired shape, the surfaces of said levers adjacent the shafts being shaped to conform with the surfaces on the base frame on which the shafts rest, straps connected at one end with said movable plates and extending over the surfaces of the base plate that receives the shafts so that the shafts when placed will lie upon said straps, a block to each end of which the other ends of the straps are connected, a cable attached to the central part of said block, a pair of pulleys mounted in connection with said frame over which said cable passes, and yielding means mounted in connection with the upsetting lever to which the other end of said cable is secured.

5. A vehicle shaft forming apparatus including a base frame with surfaces upon which a pair of shafts are adapted to be placed and curved to conform with the desired curvature of the forward portion of the shafts, means connected with one end of said frame against which the heels of the shafts abut, independently movable plates against which the other ends of the two shafts abut, a pair of upsetting levers pivoted to said plates and adapted to be folded over upon the shafts for forcing them in the desired shape, the surfaces of said levers adjacent the shafts being shaped to conform with the surfaces on the base frame on which the shafts rest, straps connected at one end with said movable plates and extending over the surfaces of the base plate that receives the shafts so that the shafts when placed will lie upon said straps, a block to each end of which the other ends of the straps are connected, a cable attached to the central part of said block, a pair of pul-

leys mounted in connection with said frame over which said cable passes, plates pivoted at each end to the pair of upsetting levers, a casing mounted on said plates, and a spring in said casing with which the other end of said cable is secured.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

GEORGE A. LAMBERT.

Witnesses:
G. H. BOINK,
O. M. MCLAUGHLIN.