

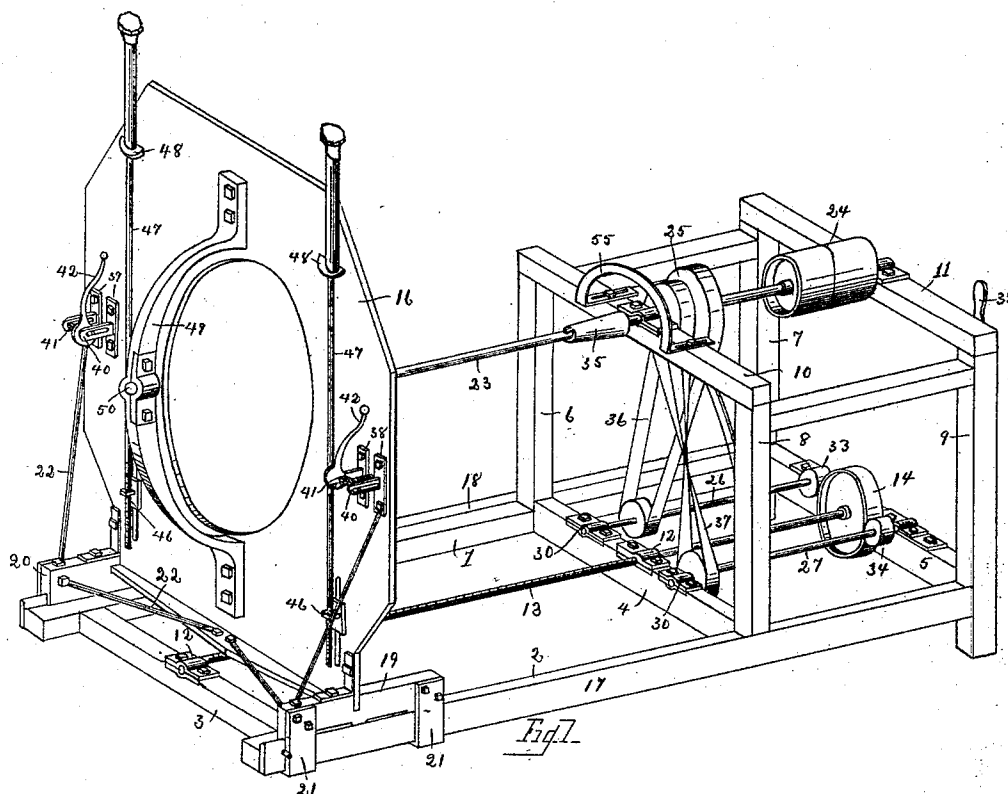
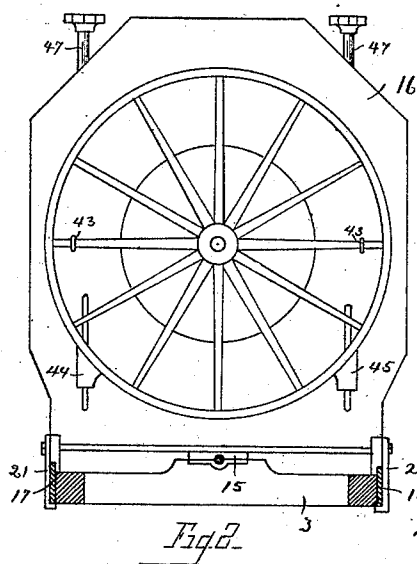
(No Model.)

3 Sheets—Sheet 1.

A. BONNER.
HUB BORING MACHINE.

No. 444,810.

Patented Jan. 20, 1891.



WITNESSES

Carroll J. Webster
A. M. Everett, Jr.

INVENTOR

Alfred Bonner
By Myer W. Webster
Attorneys

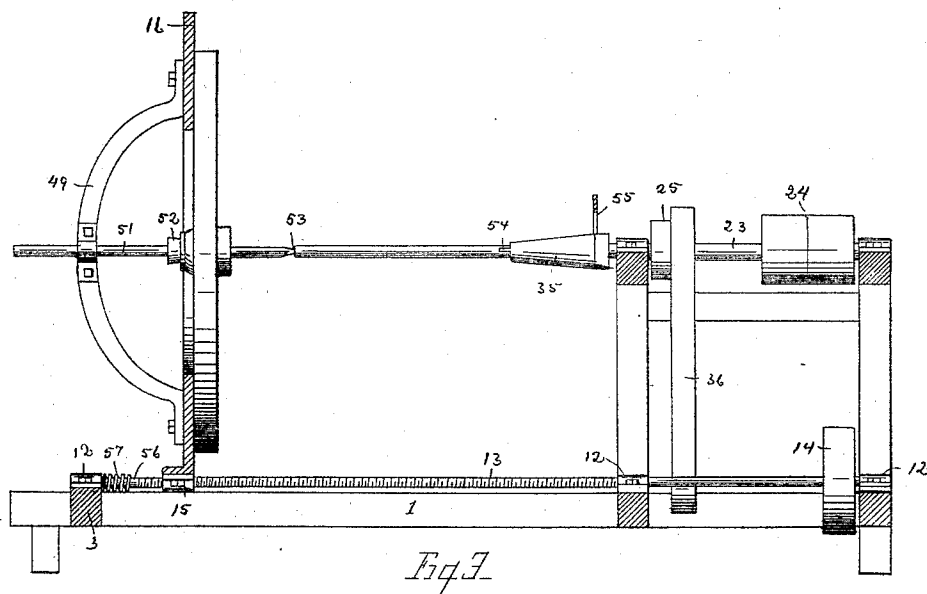
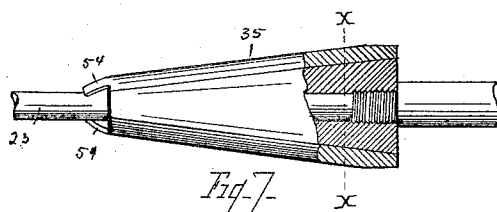
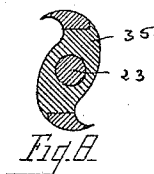
(No Model.)

3 Sheets—Sheet 2.

A. BONNER.
HUB BORING MACHINE.

No. 444,810.

Patented Jan. 20, 1891.



WITNESSES

Carroll J. Webster

R. W. Elliott

INVENTOR

Alfred Bonner,
By Myers & Webster,
Attorneys.

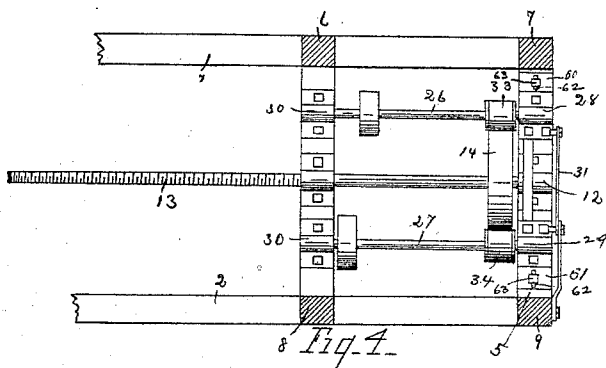
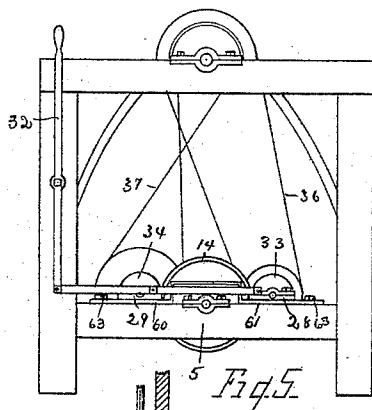
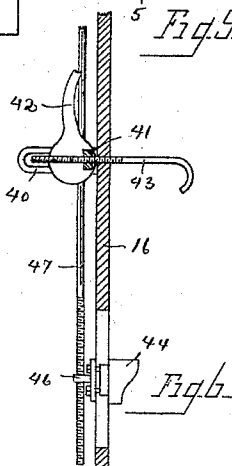
(No Model.)

3 Sheets—Sheet 3.

A. BONNER.
HUB BORING MACHINE.

No. 444,810.

Patented Jan. 20, 1891.



WITNESSES

Carroll J. Webster

R. M. E. W. S. S. S.

INVENTOR

Alfred Bonner,
By Myers & Webster
Attorneys

UNITED STATES PATENT OFFICE.

ALFRED BONNER, OF PAULDING, OHIO.

HUB-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 444,810, dated January 20, 1891.

Application filed May 24, 1890. Serial No. 353,047. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BONNER, a citizen of the United States, residing at Paulding, in the county of Paulding and State of Ohio, have invented certain new and useful Improvements in a Hub-Boring Machine; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

This invention relates to a hub-boring machine.

The object of the invention is to produce a device of the above description which will rapidly bore out the hub of a wheel for the reception of the axle-box and at the same time keep the opening thus bored concentric with the tire.

With these objects in view the invention consists in providing a face-plate for conveying the wheel, a revoluble cone-shaped cutter, and mechanism for moving the face-plate to and from the said cutter.

The invention further consists in providing a face-plate for carrying the wheel, a cutter, and mechanism for adjusting the wheel to the desired height to bring the hub-opening in line with the said cutter.

The invention further consists in the various novel details of construction, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming part of this specification, and in which like numerals of reference indicate corresponding parts, Figure 1 is a perspective view of the complete machine. Fig. 2 is an elevation of the face looking from the right-hand end of Fig. 1. Fig. 3 is a longitudinal sectional view showing the wheel in position previous to being bored, the operating mechanism being removed. Fig. 4 is a horizontal sectional view showing the relative arrangement of the mechanism for bringing the face-plate into and out of operative position with relation to the cutter. Fig. 5 is an end view of the machine, showing more particularly the mechanism for operating the face-plate-shifting mechanism. Fig. 6 is a vertical sectional view of the face-

plate and a part of the frame, showing more particularly the mechanism employed for clamping the wheel against the face-plate. Fig. 7 is a view, partly in section, of the cutter for boring out the hubs; and Fig. 8 is a transverse sectional view of the same, taken on the line *xx* of Fig. 7.

Referring to the drawings, 1 and 2 designate the side beams of the frame; 3, 4, and 5, the transverse beams for connecting the side beams together to form a rigid base; 6, 7, 8, and 9, the vertical beams, upon which are mounted transverse beams 10 and 11 for supporting the boring mechanism. Upon the beams 3, 4, and 5 are mounted journal-boxes 12, in which is journaled a shaft 13, one end of which is screw-threaded, as shown, while the opposite end carries a friction-pulley 14. The screw-threaded portion of the shaft is engaged by a threaded box 15, carried by the face-plate 16, which latter may be constructed of any desired material to suit the requirement of the case.

Upon the beams 1 and 2 are secured tracks 17 and 18, upon which are mounted movable bases 19 and 20, which are held in place upon the tracks by means of plates 21, one set only being shown. To the bases are secured brace-rods 22, which connect with and support the face-plate, as shown.

Upon the transverse beams 10 and 11 is journaled a shaft 23, carrying two pulleys 24, one of which is fast and the other loose, and which connects by a belt (not shown) with the power-transmitting mechanism. The shaft also carries a double pulley 25, which transmits motion to the face-plate-shifting mechanism, consisting of two shafts 26 and 27, mounted at one end in boxes 28 and 29, secured, respectively, to plates 60 and 61, in each of which plates there is a slot 62, through which is passed a bolt 63, taking into beam 5, whereby the plates, and consequently the boxes 28 and 29, are capable of a slight longitudinal movement on the beam. The opposite ends of the shafts 26 and 27 are journaled in stationary boxes 30 in such manner as to have sufficient play therein to permit the said movements of the boxes 28 and 29, carrying the other ends of said shafts. The movable plates carrying boxes 28 and 29 are connected by means of a rod 31, which in turn

connects with a hand-lever 32 for moving the said boxes so as to bring the friction-rollers 33 and 34 or shafts 26 and 27, respectively, into contact with the friction-pulley 14, so as to cause the face-plate to be moved to or from the cutter 35, mounted upon the shaft 23. Motion is imparted to the shifting mechanism by means of two belts 36 and 37, the belt 36 engaging the larger one of the pulleys 25, and the cross-belt 37 the smaller, the object of which will be described farther on.

Upon the outer end of the face-plate and upon each side thereof are secured two pairs of plates 38 and 39, which plates carry slotted arms 40, and in the slotted portion work cross-pieces 41, carrying eccentric levers 42, the eccentric portion of which bears against the face-plate. In the cross-pieces are screwed hooks or clamps 43, which are adapted to engage with the spokes of the wheel to be bored, so that when the eccentric levers are operated it will be clamped against the face-plate. The inner side of the face-plate carries supports 44 and 45, having shanks 46, which are engaged by threaded rods 47, working in guides 48 upon the said plates. The face-plate is also provided with a rest 49, which is suitably bolted to the same, and is provided with an opening 50, through which extends a rod 51, carrying a removable mandrel 52, for adjusting the wheel so as to bring the hub-opening in direct line with the cutter 35.

Having thus described my invention, I will explain the manner of its operation: The wheel to be operated upon is placed upon the supports 44 and 45, and the rod 51, with the mandrel 52 thereon, is inserted through the opening 50 and the mandrel forced into the hub-opening, after which the rod 51, the outer end of which is tapered, as shown at 53, is brought into engagement with the rod 23, as shown in Fig. 3, thus bringing the hub-opening in direct line with the cutter 35. If in this operation the wheel is moved away from the supports 44 and 45, they are again brought into engagement with the tire of the wheel by turning the rods 47. The hooks 43 are then turned so as to engage with the spokes, and the eccentric levers are then drawn down, thus securely clamping the wheel in position upon the face-plate. The rod 51 and mandrel 52 are then removed and the hand-lever 32 thrown in the direction necessary to bring the friction-roller 34 into contact with the friction-pulley 14, thus revolving the shaft 13 and moving the face-plate, and with it the wheel, toward the cutter. As the movement continues, the rod 23 passes through the opening in the hub and engages the opening 50 in the rest 49, thus supporting the cutter. As will be observed, the cutter is provided with two enterers 54, the function of which is to ease the entrance of the cutter should the

said opening be smaller than the end of the said cutter. The cutter then reams out the opening to the desired size, the forward movement of the face-plate being regulated by an adjustable gage or stop 55, secured to the transverse beam 10, by means of which the cutter is only allowed to enter a predetermined distance. As soon as the cutting is completed the shifting-arm is reversed, thus bringing the friction-roller 33 into engagement with the friction-pulley 14, whereby the movement of the face-plate is reversed and caused to move away from the cutter. In the event that the plate on the pulleys 24 is not shifted in time to prevent the face-plate traveling the entire extent of the shaft 13 any danger of breaking the latter will be overcome by providing the shaft with a smooth portion 56, on which the threaded nut 15 runs, a coiled spring 57, mounted on the said shaft, being designed to force the said nut back into engagement with the shaft.

I would have it distinctly understood that I do not limit myself to the exact construction shown herein, but may vary widely therefrom in carrying my invention into effect.

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

1. In a hub-boring machine, the combination of a face-plate, a series of friction-rollers, a threaded shaft engaging the face-plate, a friction-pulley carried by the said shaft, a cutter, and mechanism for throwing the friction-rollers into and out of contact with the pulley on the threaded shaft, whereby the face-plate will be caused to move to and from the cutter.

2. In a hub-boring machine, a face-plate having vertically-adjustable wheel-supports, means for clamping the wheel to the said plate, and a rest, in combination with a threaded shaft engaging the face-plate, a series of friction-rollers, a friction-pulley carried by the shaft, a cutter, and mechanism for throwing the friction-rollers into and out of contact with the said pulley to move the face-plate to and from the said cutter.

3. In a hub-boring machine, the combination of a revoluble cutter, a face-plate, a threaded shaft engaging the same, one portion of which is free from threads and carries a spring, and mechanism for revolving the shaft to cause the face-plate to move to and from the said cutter.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

ALFRED BONNER.

Witnesses:

CHAS. M. MURPHY,
J. H. OSNALT.