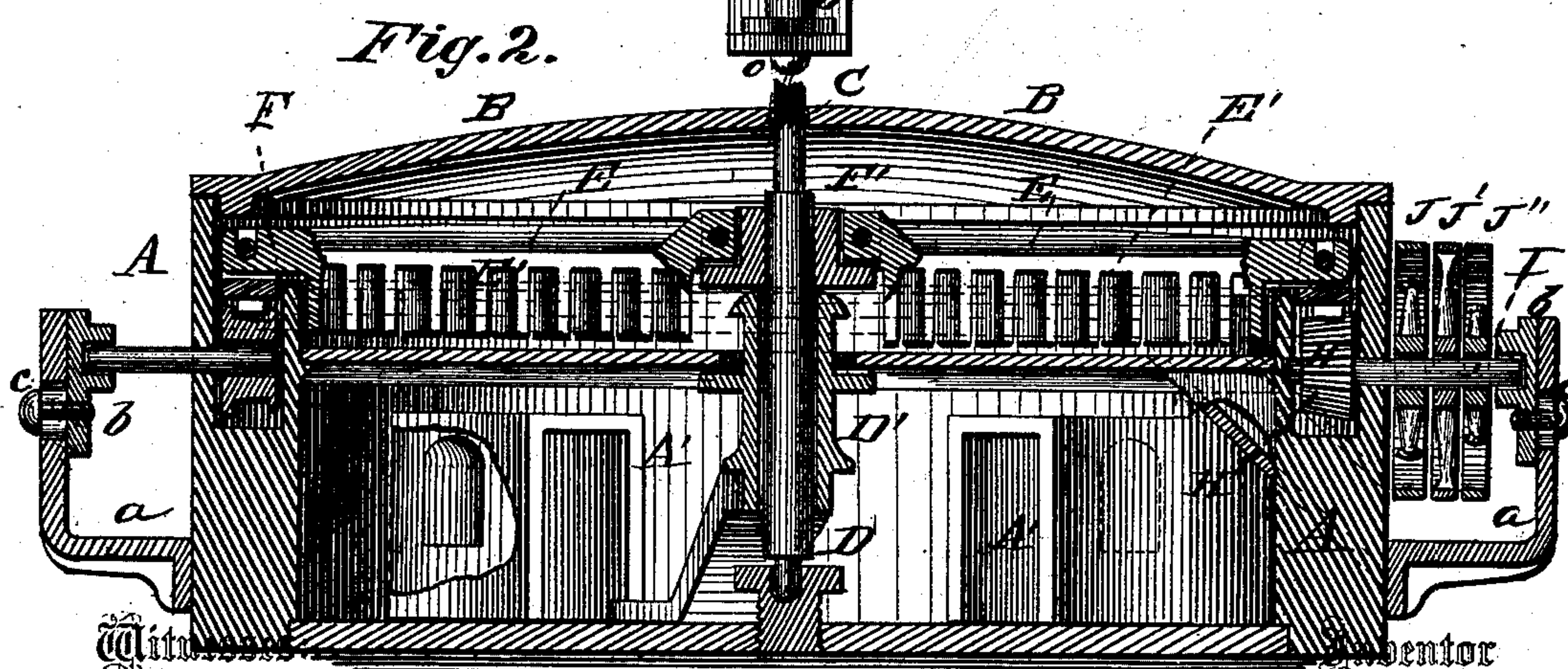
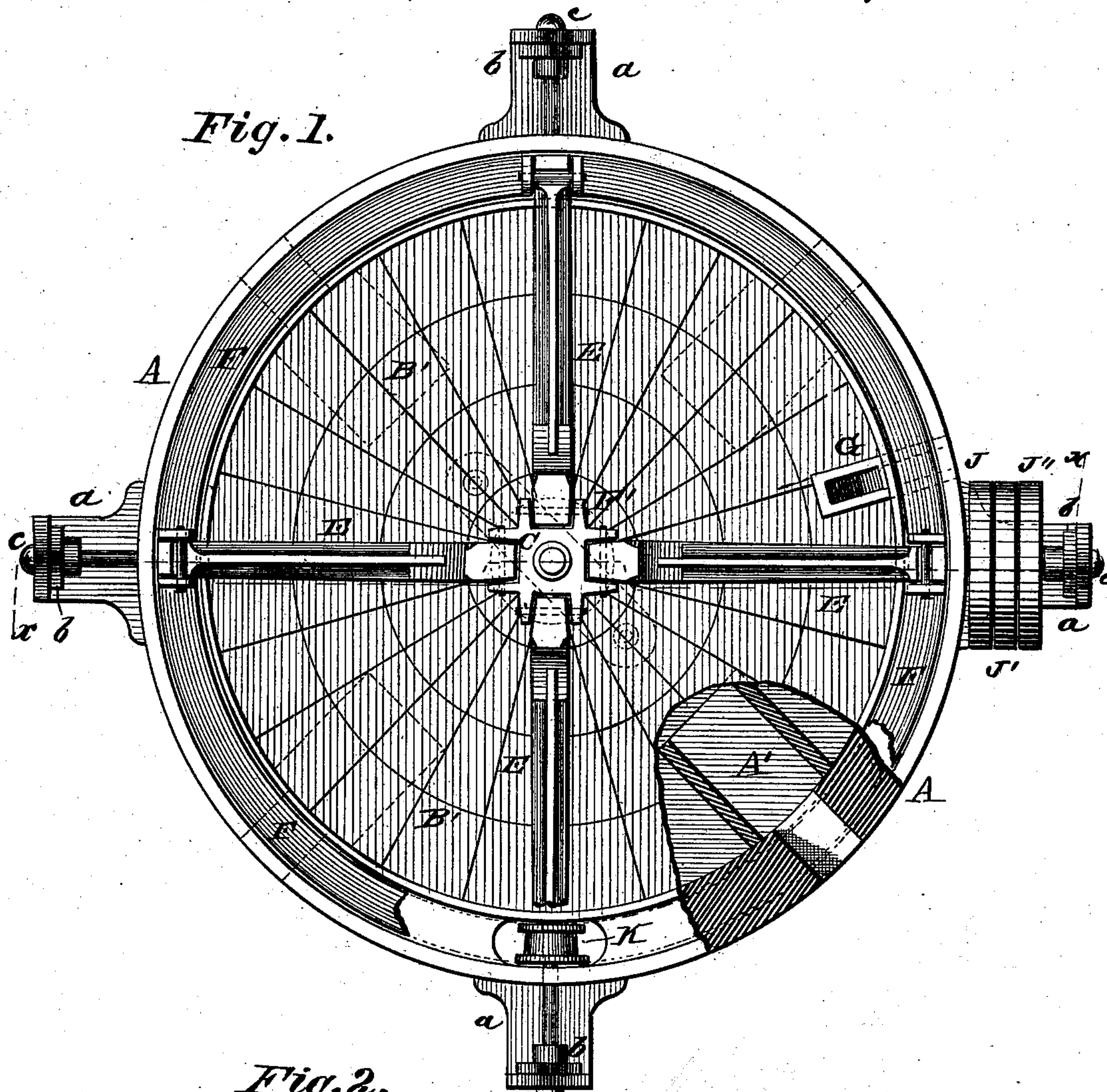


W. C. MUNROE.  
Ore-Roasting Furnace.

**No. 227,818.**

**Patented May 18, 1880.**



J. B. Dietrich,  
Jno. H. Stockman

Per *William C. Munroe.*  
C.H. Watson & Co. Attorneys.



# UNITED STATES PATENT OFFICE.

WILLIAM C. MUNROE, OF BUFFALO, NEW YORK.

## ORE-ROASTING FURNACE.

SPECIFICATION forming part of Letters Patent No. 227,818, dated May 18, 1880.

Application filed February 16, 1880.

*To all whom it may concern:*

Be it known that I, WILLIAM C. MUNROE, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Ore-Roasting Furnaces; 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in ore-roasters; and it consists in the construction and arrangement of parts, as will be hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a plan view with the top removed, and Fig. 2 is a central vertical section.

In the drawings, A indicates the casing; A', the fire-boxes in base of same; B, the top; B', the bed-plate on which the ore rests; C, central shaft; D, bearing for shaft C; D', sleeve through which shaft C passes, and provided with a flange to support the center of the bed B'; E, the stirrer-arms; E', the stirrers; F, ring to which arms E are secured, and provided with cogs on its under side; F', central support for arms E, working on shaft C; G, outlet for roasted ore; H, gear-wheel engaging with the under side of ring F; I, shaft supporting gear-wheel H; J J' J'', band-wheels on shaft I; K, rollers supporting ring F; a, brackets supporting the shaft I and the shafts of the rollers K; b, sliding bearings for the shaft I and the shafts of the rollers K; c, set-screws.

The casing A is of cylindrical form, and is provided in its base with the fire-boxes A'. Above these fire-boxes is arranged the stationary bed B', provided with a suitable outlet, G.

Revolving in a groove outside the edge of the bed B is the ring F, supported by the stirrer-arms E, said ring receiving its motion from the gear-wheel H. These stirrer-arms E are pivoted to the ring F and to the central support, F', for the purpose of allowing the stirrers to

adjust themselves to the quantity of ore on the bed.

The shafts of the wheel H and rollers K may be adjusted up and down by means of the sliding bearing b, to compensate for the wear of the ring and the stirrer-arms.

Upon the shaft I are arranged the band-wheels J J' J'', the wheels J J'' being keyed to the shaft, and the wheel J' being an idler.

The belt working the wheel J may be straight, and that working the wheel J'' may be twisted, in order to impart a reverse motion by shifting the belts from one side to the other.

Suitable openings are provided in the casing through which the waste heated products of combustion make their exit from the furnace.

By this arrangement the ore may be moved from the center to the circumference of the bed and returned to the center again, thereby exposing it to more heat and making a perfect roast. It was almost impossible to accomplish this by the devices heretofore in use, for the reason that if the ore were not perfectly roasted and the discharge closed the ore would pile up on the ends of the arms and stop the machine.

In other devices, where the bed revolved, the ore, partly roasted, would be discharged and then recharged into the furnace, and the operation continued until the ore was roasted; but by reversing the motion of the stirrers the ore can be kept evenly distributed over the bed until perfectly roasted.

Some ores require less time to roast than others, and by this arrangement the ore can be kept in the furnace until finished.

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

1. In an ore-roasting furnace, the ring F, central support, F', and stirrer-arms E, in combination with the shaft I, carrying gear-wheel H, and band-wheels J J' J'', substantially as and for the purpose set forth.

2. The casing A, brackets a, having the adjustable bearings b, in combination with gear-wheel H, rollers K, and ring F, whereby the

ring may be raised or lowered to compensate for the wear of the parts, substantially as specified.

- 5 3. The casing A, fire-boxes A', central shaft, C, sleeve D', and bearing D, in combination with the bed B', stirrer-arms E, ring F, and a suitable mechanism for imparting a reverse motion to the stirrer-arms, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WM. C. MUNROE.

Witnesses:

I. N. SMITH,  
JAMES WELLS.