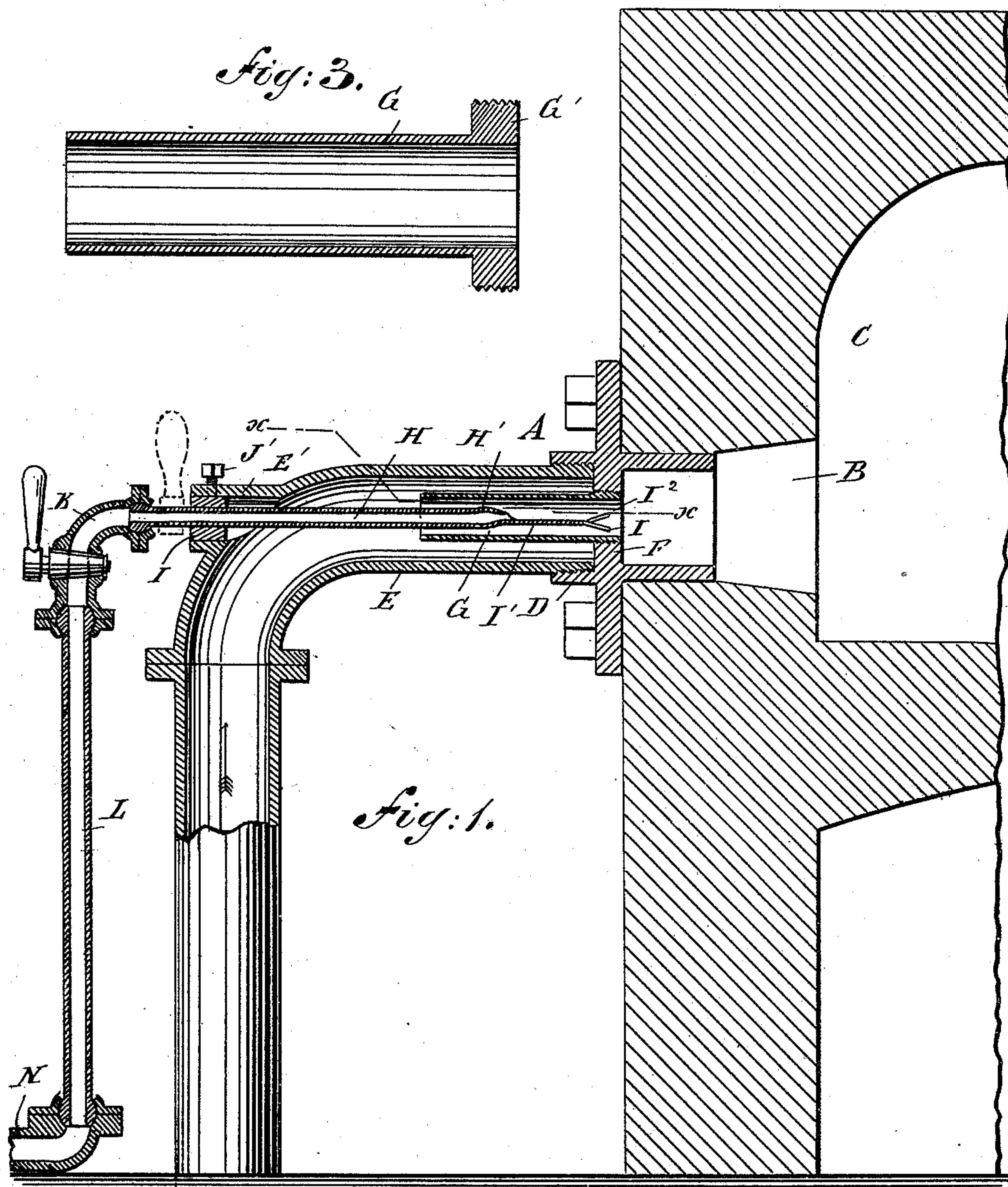


(No Model.)

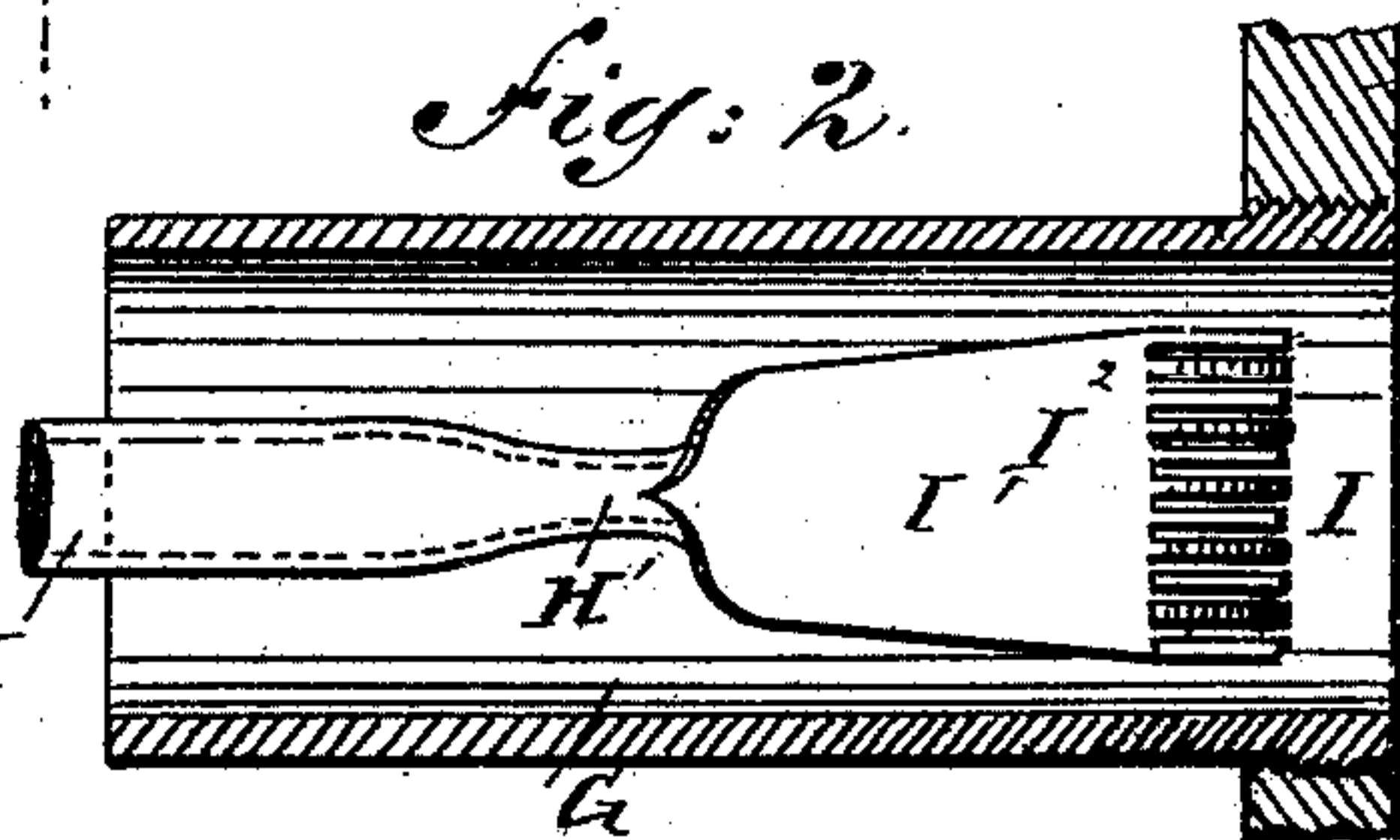
J. BURNS.
HYDROCARBON BURNER.

No. 464,850.

Patented Dec. 8, 1891.



WITNESSES:
Chas. Nida
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UNITED STATES PATENT OFFICE.

JOSEPH BURNS, OF FORT PLAIN, NEW YORK.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 464,850, dated December 8, 1891.

Application filed October 20, 1890. Serial No. 368,629. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BURNS, of Fort Plain, in the county of Montgomery and State of New York, have invented a new and Improved Hydrocarbon-Burner, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved hydrocarbon-burner which is simple and durable in construction, very effective in operation, and permits the operator to change the intensity of the flame whenever required, and also to direct the flame to any desired place in the furnace in which the burner is employed.

The invention consists in certain parts and details and combinations of parts, which will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement as applied. Fig. 2 is an enlarged sectional plan view of the burner proper on the line $\alpha\alpha$ in Fig. 1, and Fig. 3 is an enlarged sectional side elevation of a modified form of air-pipe.

The improved hydrocarbon-burner is provided with a casing A, extending into the opening B, leading to the interior of the furnace C, on which the hydrocarbon-burner is to be applied. The casing A is provided with suitable flanges bolted or otherwise secured to the outside of the furnace C, the outside of the casing being provided with a threaded flange D, in which screws the air-supply pipe E, connected with a suitable source of air-supply, usually a blower, forcing air through the pipe to the casing. The latter is also provided with an interior vertically-arranged flange F, in which screws one end of an air-feed pipe G, extending concentrically into the main air-pipe E, as is plainly illustrated in Fig. 1. Into this air-feed pipe G extends the inner end of an oil-supply pipe H, supporting at its front end the burner I and passing at its rear end through an offset E', and a collar J held in the said offset by means of a set-screw J' or other device. The offset E' is preferably formed on the bent part of the

pipe E, and is so arranged that the oil-supply pipe H extends concentrically to the pipes G and E. The outer end of the oil-supply pipe H is preferably connected by a ball-joint with a faucet K, connected by a ball-joint with a vertically-arranged pipe L, connected at its lower end by a ball joint with the pipe N, connected with a suitable source of oil-supply. A handle or other means may be secured to the outer end of the oil-supply pipe H, as shown in dotted lines in Fig. 1.

By the construction just described the oil-supply pipe H may be turned in its bearing in the collar J to change the angle of the burner I, or may be moved forward and backward in the said collar by the operator without shutting off the oil-supply. Thus the flame may be directed into the furnace at any desired angle, and when the air and oil are shut off the burner may be entirely withdrawn from the furnace. The supply of the oil to the oil-pipe H is regulated by the valve in the faucet K, so that a larger or smaller quantity of oil is admitted to the pipe H, as desired. The inner end of the oil-supply pipe H is slightly contracted, as at H', and from this contracted neck extends a plate I', forming a part of the burner I and provided at its front end with prongs I², which extend alternately upward and downward through the oil passing from the pipe H to facilitate its atomization.

Air-feed pipes G of various diameters may be used in the casing A to increase or diminish the intensity of the flame at the burner I. To make these pipes G interchangeable in the casing, the said pipe is preferably provided with a threaded collar G', as illustrated in Fig. 3, adapted to screw onto the threaded flange F. For increasing and diminishing the bore of the collar G' and the pipe G various sizes of the latter may be used in the same casing A.

The operation is as follows: When the several parts are in the position indicated in Fig. 1 and air is forced into the pipe E by the blower or other means, then the air, in order to pass to the burner I, has to pass into the pipe G, which latter is the real outlet for the main air-supply pipe E. When the operator opens the valve in the faucet K, the oil flows from the pipe N through the pipe

L and the faucet K into the oil-supply pipe H and through its contracted neck H' onto the plate I' of the burner I. The oil, as soon as it leaves the contracted neck H' of the pipe, spreads on the plate I', and thus comes in contact with the compressed air, which moves it forward over the plate and onto the prongs I², so as to be readily taken up and atomized by the air. When the mixture is ignited, the flame extends from the burner I through the inner part of the casing A and opening B into the interior of the furnace C. The flame extends in a sheet from the burner I, and when the operator turns the oil-supply pipe H he changes the position of the burner so that the flame varies its position correspondingly, and thus the sheet of flame may extend horizontally, in an inclined position, or vertically, as desired. It will further be seen that by moving the oil-supply pipe farther inward or outward, so as to change the position of the burner I in the pipe G, the intensity of the flame may be varied. This is due to the fact that when the burner I is near the inner end of the pipe G, as shown in Fig. 1, compressed air rushing through the pipe G atomizes the oil more readily as said oil rushes over the entire surface of the plate I' and the prongs I². When the oil-supply pipe H is drawn outward, then the force of the air on the oil is exerted on only part of the plate I, and thus the oil is not as thoroughly atomized as in the former case. Thus the fire within the furnace on which the burner is applied can be readily evened up at any desired part, at the same time insuring complete combustion.

I do not limit myself to the particular means illustrated for permitting the oil-supply pipe H to turn and to slide for the purpose mentioned.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. A hydrocarbon-burner comprising the main air-pipe having a bend and provided with the smaller concentric outlet-pipe G, open at both ends, the sliding and turning oil-tube extending through the bend of the main air-pipe into the pipe G, provided on its front end with a burner proper and at its rear end with a faucet, a ball-and-socket connection between said faucet and oil-pipe, an oil-supply pipe N, and a pipe L, having a ball-and-socket connection therewith at one end and with the faucet at its other end, substantially as set forth.

2. The combination, with the main air-pipe having a bend and a smaller concentric air-outlet pipe G, of a rotary and longitudinally-movable oil-tube extending through the said bend into the pipe G and provided at its inner end with an outlet and a plate to receive the oil, and terminating in a series of prongs, whereby by turning the oil-pipe the angle of the plate may be changed, substantially as set forth.

3. In a hydrocarbon-burner, the combination, with the air-supply pipe and an oil-supply pipe having a contracted end, of a burner held on the said contracted end and comprising a plate and prongs, substantially as shown and described.

4. In a hydrocarbon-burner, the combination, with the air-supply pipe and an oil-supply pipe having a contracted neck, of a plate extending from the said contracted neck, and alternately upwardly and downwardly extending prongs formed on the front end of the said plate, substantially as shown and described.

JOSEPH BURNS.

Witnesses:

WILLIAM J. MICHAUD,
WILLIAM MILLER,