No. 735,967. PATENTED AUG. 11, 1903.

E. GREEN.

SOOT CLEANER.

APPLICATION FILED APR. 4, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 2

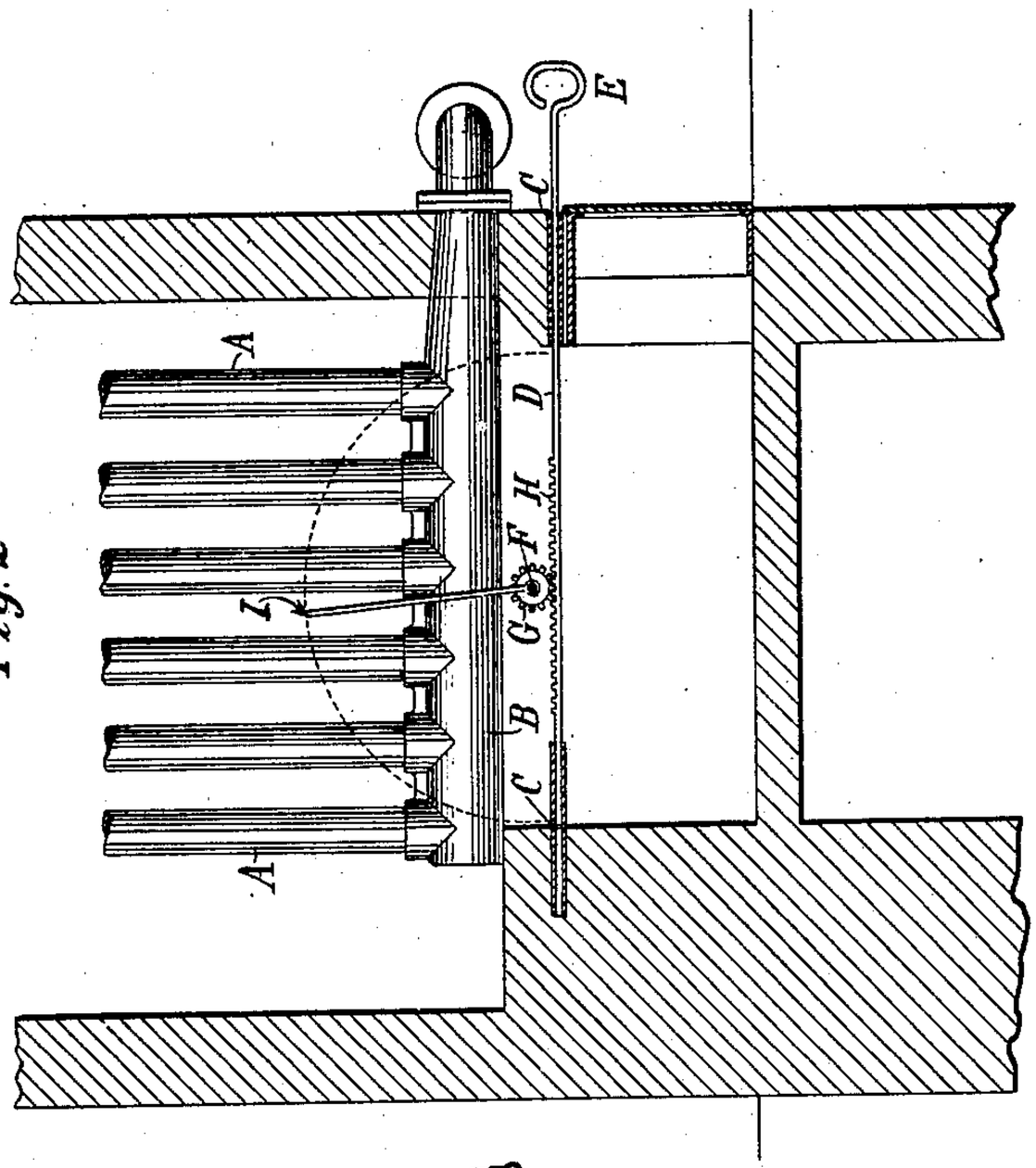
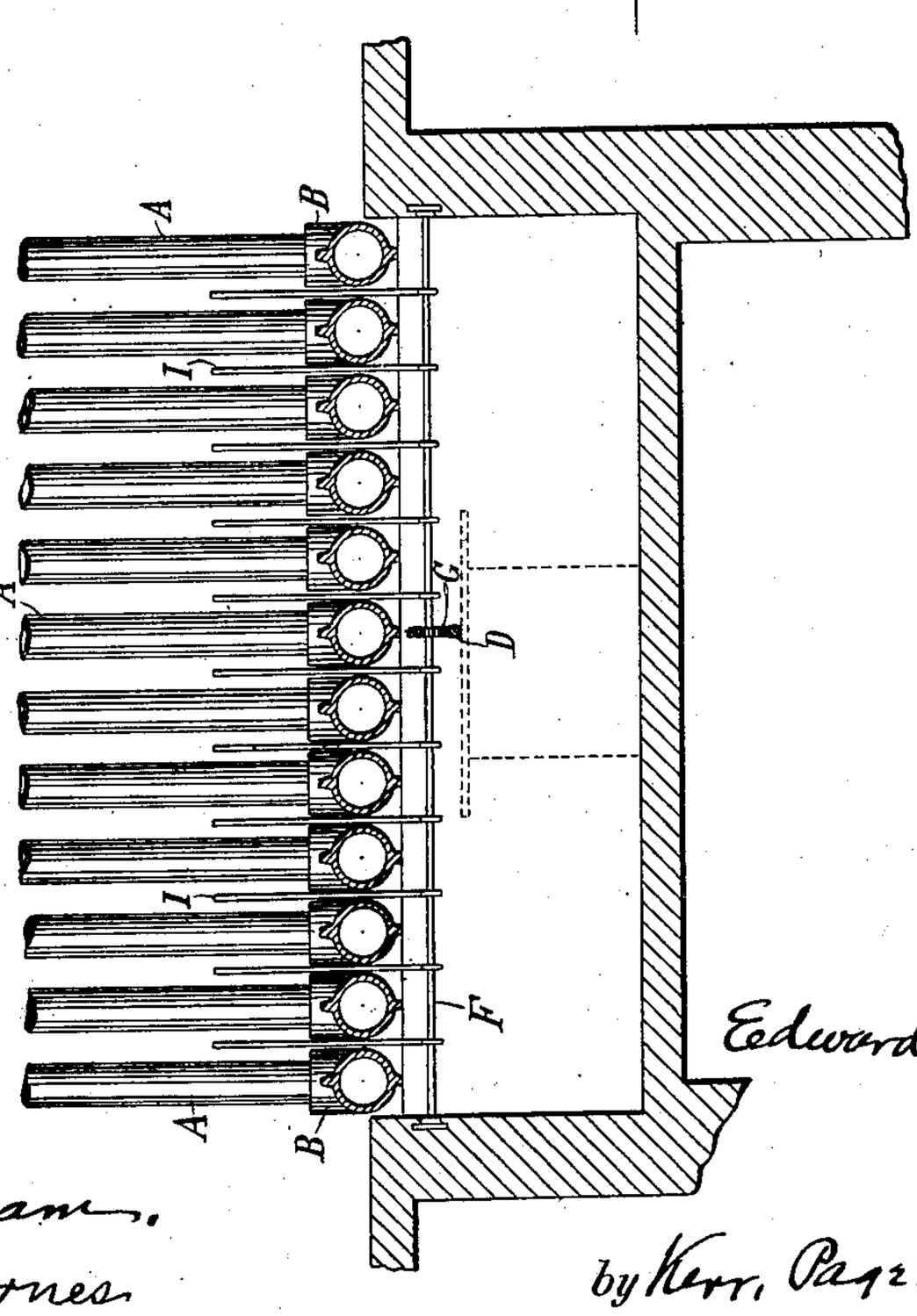


Fig. 1



Witnesses:
S. S. Dunham.
Thos. J. Byrnes.

Edward Green,
Inventor

by Kerr, Page & Cooper Att'ys

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4

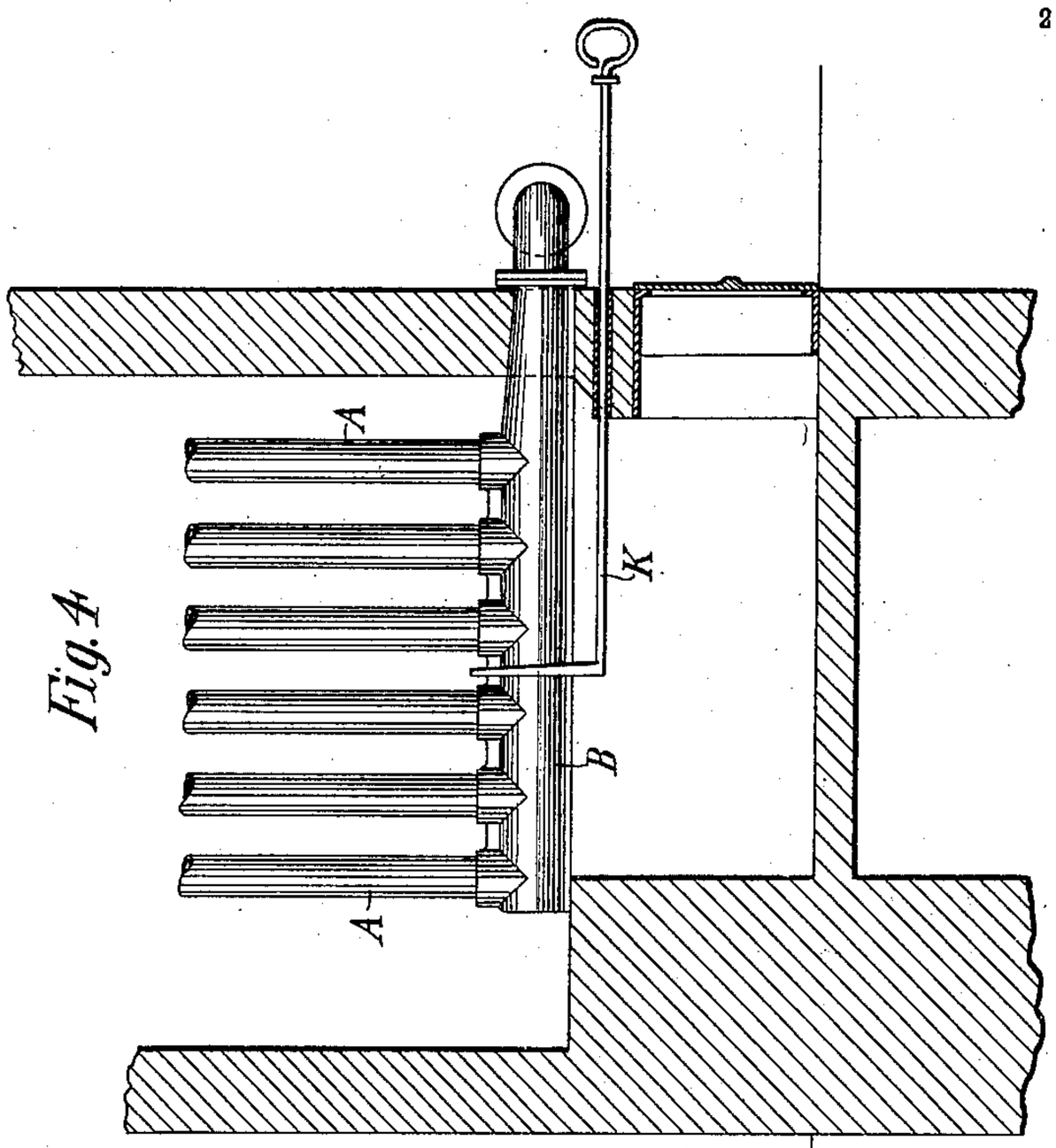

Fig. 3

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No. 735,967. Patented August 11, 1903.

UNITED STATES PATENT OFFICE.

EDWARD GREEN, OF YORK, ENGLAND.

SOOT-CLEANER.

SPECIFICATION forming part of Letters Patent No. 735,967, dated August 11, 1903.

Application filed April 4, 1903. Serial No. 151,089. (No model.)

To all whom it may concern:

Be it known that I, EDWARD GREEN, a subject of the King of Great Britain, residing at Nunthorpe Hall, city of York, county of York, England, have invented certain new and useful Improvements in Soot-Cleaners, of which the following is a specification, reference being had to the drawings accompanying and forming part of the same.

My invention, which forms the subject of the present application, has to do with means for removing soot from the tubes and headers of fuel-economizers or feed-water heaters or steam boilers or generators; and it consists of the novel features and combinations hereinafter described, and more particularly pointed out in the claims.

In a prior patent, No. 513,917, issued to me January 30, 1894, I have shown an apparatus for removing soot from fuel-economizers and boiler-tubes by means of scrapers which encircle the pipes, scraping them so that the soot falls to the bottom on the pipe-frame or bottom header. The present invention is designed to keep the soot from accumulating there and scrapes off the ends of the tubes and parts connecting the same to the bottom or ends of the frame.

The embodiment, which I shall now describe, will be best understood by referring to the drawings, in which—

Figure 1 is a sectional view of part of a fuel-economizer, showing my invention applied thereto. Fig. 2 is a section at right angles to that of Fig. 1. Figs. 3 and 4 are sections similar to Figs. 1 and 2, showing a modification.

In the figures, A represents the tubes in which the generation of the steam takes place or the tubes of the feed-water heater or fuel-economizer. These are joined at their ends to what may be termed "connecting chambers or headers" B, separated from each other longitudinally by a narrow space, as shown. At convenient points near the pipe ends, preferably immediately below, I arrange alined bearings, as C C. Slidably mounted therein is a rack-bar D, provided with any suitable means for reciprocating the same. In the embodiment of my invention illustrated, which is a form to be manually operated, a handhold E is provided. At right angles to the rack-bar and suitably journaled for rotation is a shaft F, on which is rigidly mounted a gear wheel or pinion G, meshing with the rack H on the bar D, so that the reciprocation of the bar will rotate the shaft preferably through an arc of at least one hundred and eighty degrees. Secured firmly to the shaft F is a series of scraper-arms I, each placed directly in line with a space between adjacent tubes, as shown.

From the foregoing the operation of my apparatus will be readily understood. When the ends of the pipes or the connecting-chambers become coated with soot or the spaces between the chambers filled, the bar D is reciprocated, thus rotating the shaft F, and with it the arms I, which swing up between the pipes and dislodge the accumulations, as will be readily understood.

In the modification shown in Figs. 3 and 4 a series of bars K are employed, each having on its inner end an upturned scraper-arm which scrapes the pipes and adjacent parts as the bar is moved back and forth.

The simplicity and effectiveness of my invention are apparent.

While I have shown and described but two species, it is evident that many modifications might be made without departing from the spirit of my invention, and I therefore do not consider myself limited to the precise form shown; but

What I claim is—

1. In a soot-cleaner for tubular steam and hot-water generators and the like, the combination with a plurality of parallel, spaced headers, and a series of tubes connected to each of the headers and extending at an angle therefrom, of scraper-arms between the headers, each pivoted at one end on a relatively stationary pivot to swing between adjacent headers and the tubes connected thereto, and means for actuating said arms, as set forth.

2. In a soot-cleaner for tubular steam and hot-water generators and the like, the combination with a plurality of parallel, spaced headers, and a series of tubes connected to each of the headers and extending at an angle therefrom, of scraper-arms between the headers, each connected at one end to a rock-shaft, and means for rocking said shaft,

whereby the arms will be swung between their adjacent headers and the tubes connected thereto, as set forth.

3. In a soot-cleaner for tubular steam and hot-water generators and the like, the combination with a plurality of parallel, spaced headers, and a series of tubes connected to each of the headers and extending at an angle therefrom, of scraper-arms between the headers, each connected at one end to a rock-shaft, a pinion on the shaft, and a reciprocating rack-bar engaging the pinion, whereby the shaft may be rocked and the arms swung between their adjacent headers and the tubes connected thereto, as set forth.

EDW. GREEN.

Witnesses:
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FRED. C. SMITH.