

(No Model.)

3 Sheets—Sheet 1.

C. J. ALLEN & F. R. TIBBITTS.
FURNACE.

No. 598,835.

Patented Feb. 8, 1898.

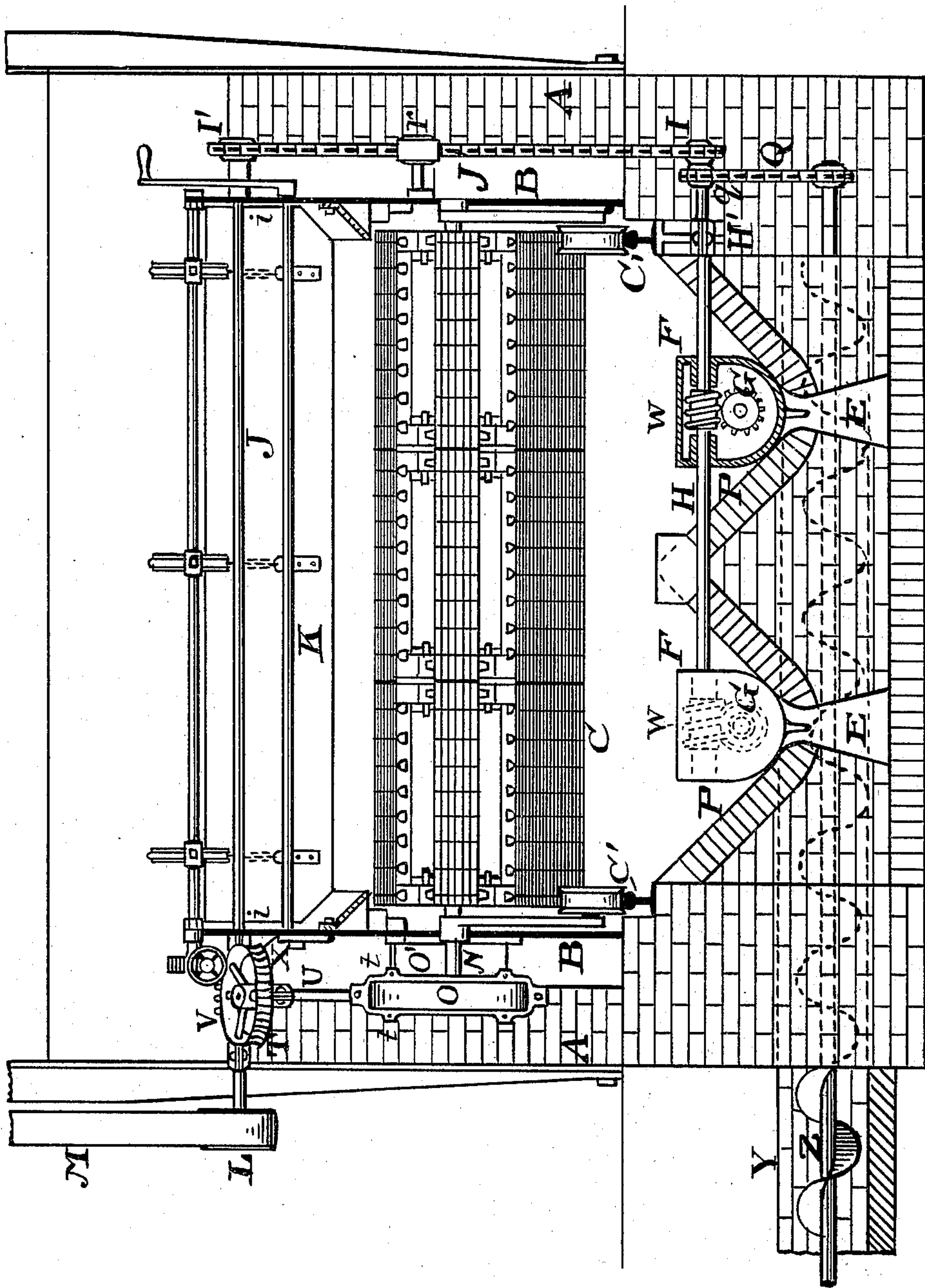


Fig. 1.

Witnesses,

Jac. Goldberger

P. Traynor

Inventors

Charles J. Allen.

Frank R. Tibbitts

By Geo. W. Tibbitts, Attorney

(No Model.)

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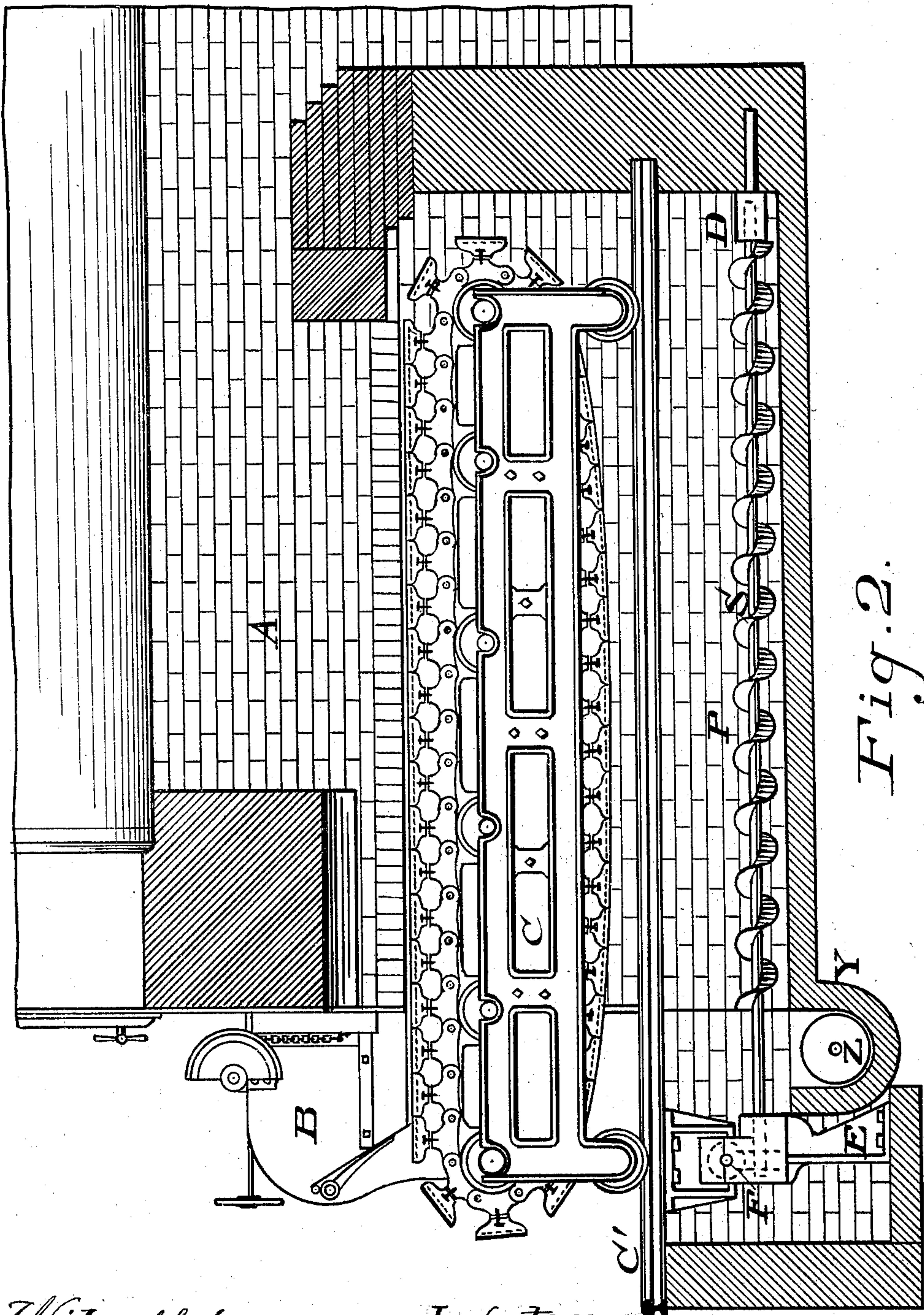


Fig. 2.

Witnesses,

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(No Model.)

3 Sheets—Sheet 3.

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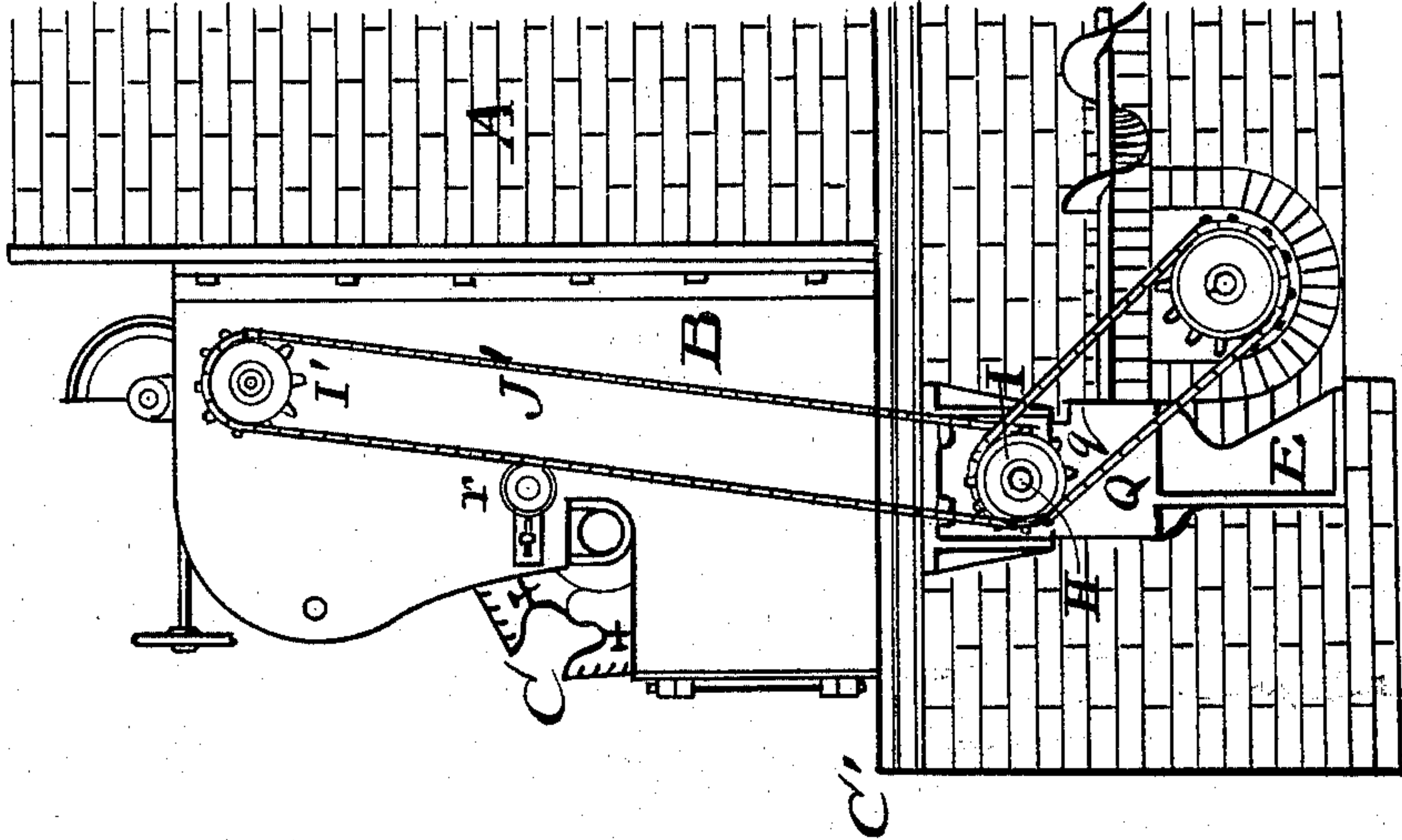


Fig. 4.

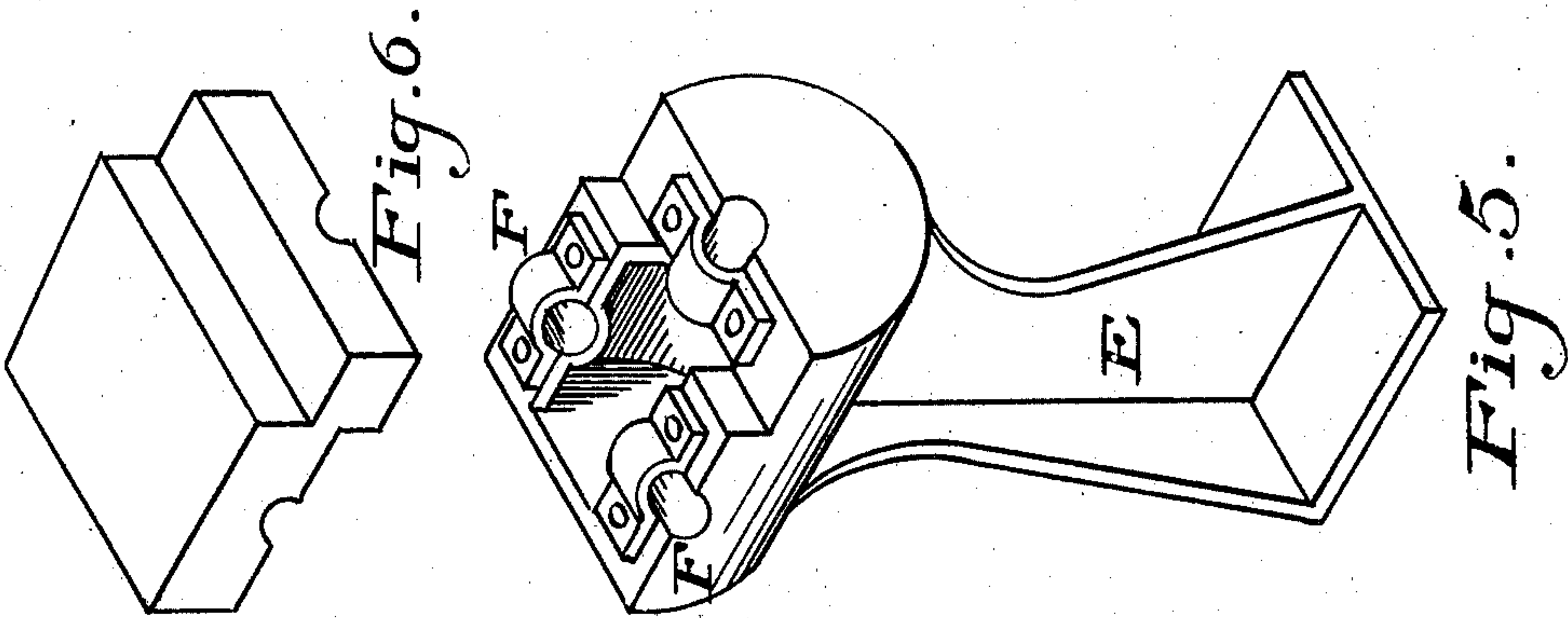


Fig. 6.

Fig. 5.

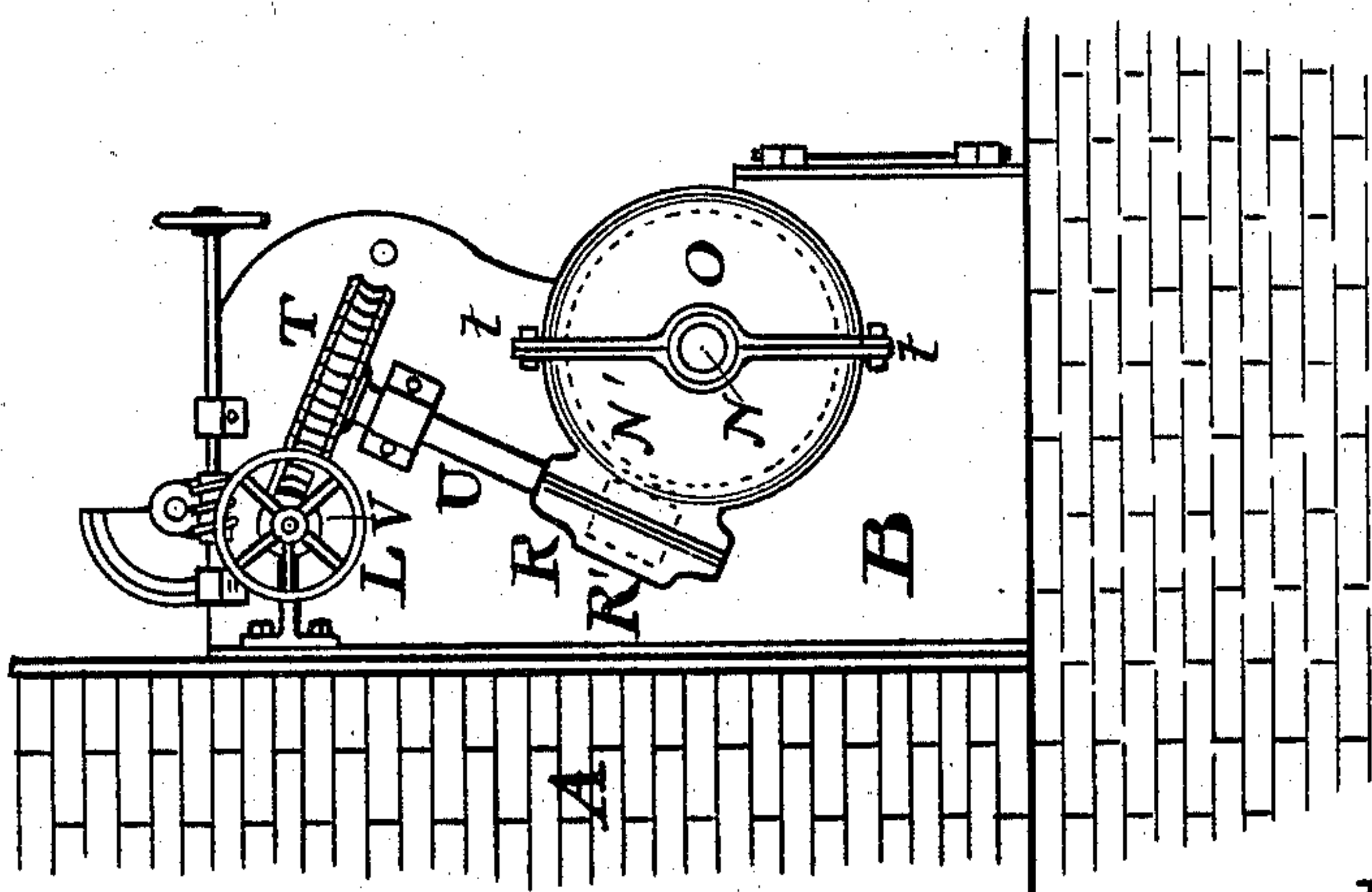


Fig. 3.

Witnesses,
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Frank R. Tibbitts
By Geo. W. Tibbitts, Attorney.

UNITED STATES PATENT OFFICE.

CHARLES J. ALLEN AND FRANK R. TIBBITTS, OF CLEVELAND, OHIO, AS-
SIGNORS TO THE PLAYFORD STOKER COMPANY, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 598,835, dated February 8, 1898.

Application filed April 17, 1897. Serial No. 632,691. (No model.)

To all whom it may concern:

Be it known that we, CHARLES J. ALLEN and FRANK R. TIBBITTS, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

This invention relates to furnaces in which endless traveling grates are employed; and the invention consists in providing automatic means for removing the ashes from the ash-pit. In furnaces of this class the ashes are deposited from the rear end of the grate-surface into the rear end of the ash-pit and their removal by hand with rakes or shovels is very difficult. Our invention removes the ashes as fast as they are deposited, and therefore prevents any accumulation in the pit.

The invention consists of spiral conveyers arranged in the bottom of slanting-sided pits in operative connection with the mechanism which operates the traveling grate, substantially as hereinafter described, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a furnace below the bottom line of the boiler, showing the traveling grate and the ash-pit with conveyers, together with the mechanism for operating them conjointly. Fig. 2 is a longitudinal section on line 2 2 on Fig. 1, showing the grate-carriage and the ash-pit beneath it provided with a conveyor. Fig. 3 is a side elevation of one of the front extension-plates looking in the direction of the arrow, showing a worm-gear mechanism used for operating the grate and conveyor. Fig. 4 is a side elevation of the opposite front extension-plate, showing the sprocket-wheels and chain belts connecting the driving-shaft with the conveyor-shafts. Fig. 5 is an enlarged detached view of one of the pedestals and bearings for the said conveyor-shafts. Fig. 6 is a cover for the casings of said bearings.

A A represent the side walls of a boiler-setting. B B are front extension-plates at each side of the furnace-opening. C is a grate-carriage standing on track-rails C' C', fixed at the inside base of the side walls A A on the floor-line. These parts do not comprise any part

of our present invention, but are introduced to show their relation with our new and additional improvement described as follows:

P is the ash-pit extending from the bridge-wall out and beyond the front of the furnace. As seen in Fig. 1, the pit is divided into two trough-shaped bottoms; but for narrower furnaces one trough would be sufficient. In said troughs are provided spiral conveyers S, as follows. At the rear end of the troughs are fixed to the bridge-wall bearing-blocks D for the rear journals of the conveyor-shafts S. At the front end of the pit are placed pedestals E E, supporting inclosed bearings for the forward ends of the conveyor-shafts. Said bearings F F are cast with the lower parts of the casing, as seen in Fig. 5. A cover, Fig. 6, is provided for the casings for protecting the bearings from dust and dirt.

G G are worm-gears on the ends of the conveyor-shafts within the casings. Bevel-gears may be substituted for the worm-gear, if desired. H is a transverse shaft supported in the transverse bearings in the said casings, and is provided with worms *w w*, meshing with the said gears G G. Shaft H also extends out at one side of the pit and is also supported in a hanger-bearing H', suspended from the track-rail C', and on its end is attached a sprocket-wheel I, to which power is applied for operating the conveyers, as hereinafter shown.

J is a driving-shaft extending across and in front of the door K of the furnace and is supported in bracket-bearings *i i*, fixed to the outside of and near the upper ends of the front extension-plates B B. On the end of said shaft J, over the protruding end of shaft H, is attached a sprocket-wheel I', connected by a chain belt J' with the sprocket-wheel I on the shaft H. On the opposite and protruding end of shaft J is attached a driving-pulley L, connected by belt M with a suitable power source for operating same.

On the end of shaft N of the traveling-grate mechanism is provided a worm-gear for operating same in conjunction with the aforesaid conveyers.

O is a circular casing supported on the outside of the extension-plate B, made in two parts, having flanges *t t*, by means of which

the two parts are bolted together. One of said parts has a bracket O' cast upon it, by means of which it is bolted to the said extension-plate B. On said part is also provided
 5 an inclosed bearing R for the worm R', meshing with a gear N' within the casing O. U is a shaft carrying the said worm R', supported in a diagonal line by the said bearing R and a bracket-bearing X, bolted onto the extension-plate B. On the upper end of shaft U
 10 is attached a gear-wheel T, meshing with a worm V on the driving-shaft J. By this means the ash-conveyers are operated simultaneously with the traveling grate.

15 A transverse conveyer may be provided for carrying the ashes away from the front end of the pit, working conjointly with the pit-conveyers S, as follows: Y is a trough or conduit at the front end of the pit P on a lower
 20 level than the bottom of the pit and into which the ashes are deposited by the said conveyers S. Said trough or conduit leads out through the side wall of the pit and out through the building or boiler-house, so that the ashes are
 25 conveyed out of the building. Z is a spiral conveyer in said trough or conduit Y, having its shaft extending out through the wall of the pit and is provided with a sprocket connected by chain belt Q with a sprocket q on
 30 shaft H, by means of which said conveyer Y has simultaneous movement with the conveyers S.

On the plate B is adjustably attached a pressure-roller r', bearing against the chain
 35 belt J', for the purpose of taking up the slack of the chain should it become loose or stretched.

Having described our invention, we claim—

1. The combination with the ash-pits P, of conveyers S mounted therein, the pedestals
 40 E, having covered bearings and gear-chambers supporting the forward ends of the conveyers and the gears G, counter-shaft H having worms w, also supported in said covered pedestal-bearings, the sprocket I on the shaft
 45 H, chain belt J' connecting said sprocket with sprocket I' on the shaft J mounted in bearings i i on the front extension-plates B B, and means applied to said shaft J for operating
 50 the conveyers in conjunction with the traveling grate, substantially as described.

2. The combination with the ash-pits P, of conveyers S mounted therein, the pedestals
 55 E, having covered bearings and gear-chambers supporting the forward ends of the conveyers and the gears G, counter-shaft H having worms w, also supported in said covered pedestal-bearings, the transverse conduit Y
 60 at the forward end of and below the mouth of the said pits P, a conveyer Z mounted in said conduit, the sprocket q on said shaft H, chain belt Q connecting said sprocket with a sprocket on the shaft of conveyer Z, and the sprocket I on the shaft H, chain belt J' connecting
 65 said sprocket I with a sprocket I' on the shaft J mounted in the bearings i i on the front extension-plates B B, and means applied to said shaft J for operating the conveyers in conjunction with the traveling grate, substantially as described.

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 FRANK R. TIBBITTS.

Witnesses:

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