(No Model.)

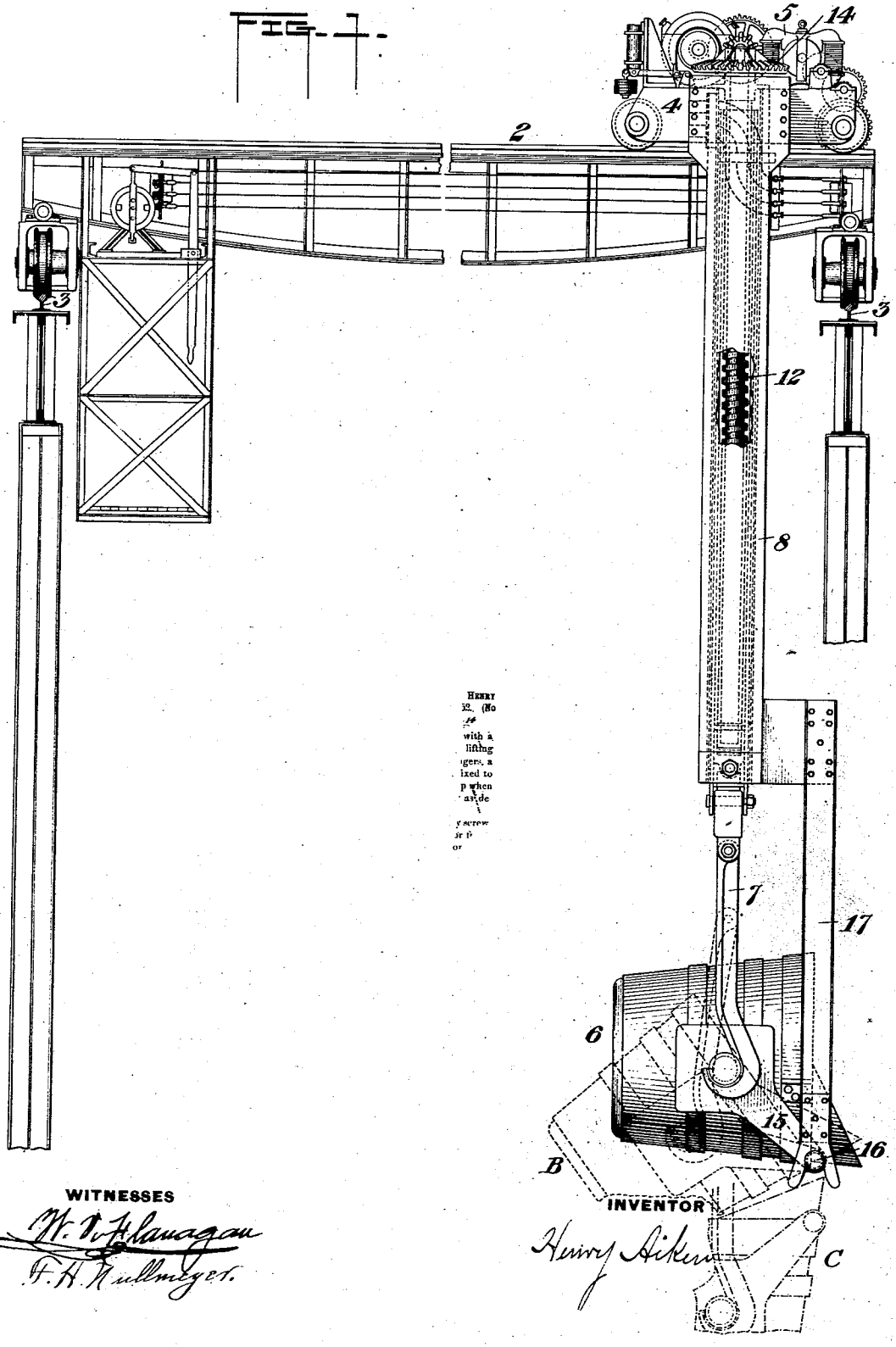
2 Sheets—Sheet 1.

H. AIKEN.

MECHANISM FOR OPERATING LADLES.

No. 564,770. Patented July 28, 1896.

FIG. 1.



WITNESSES

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INVENTOR

Henry Aiken

(No Model.) 2 Sheets—Sheet 2.

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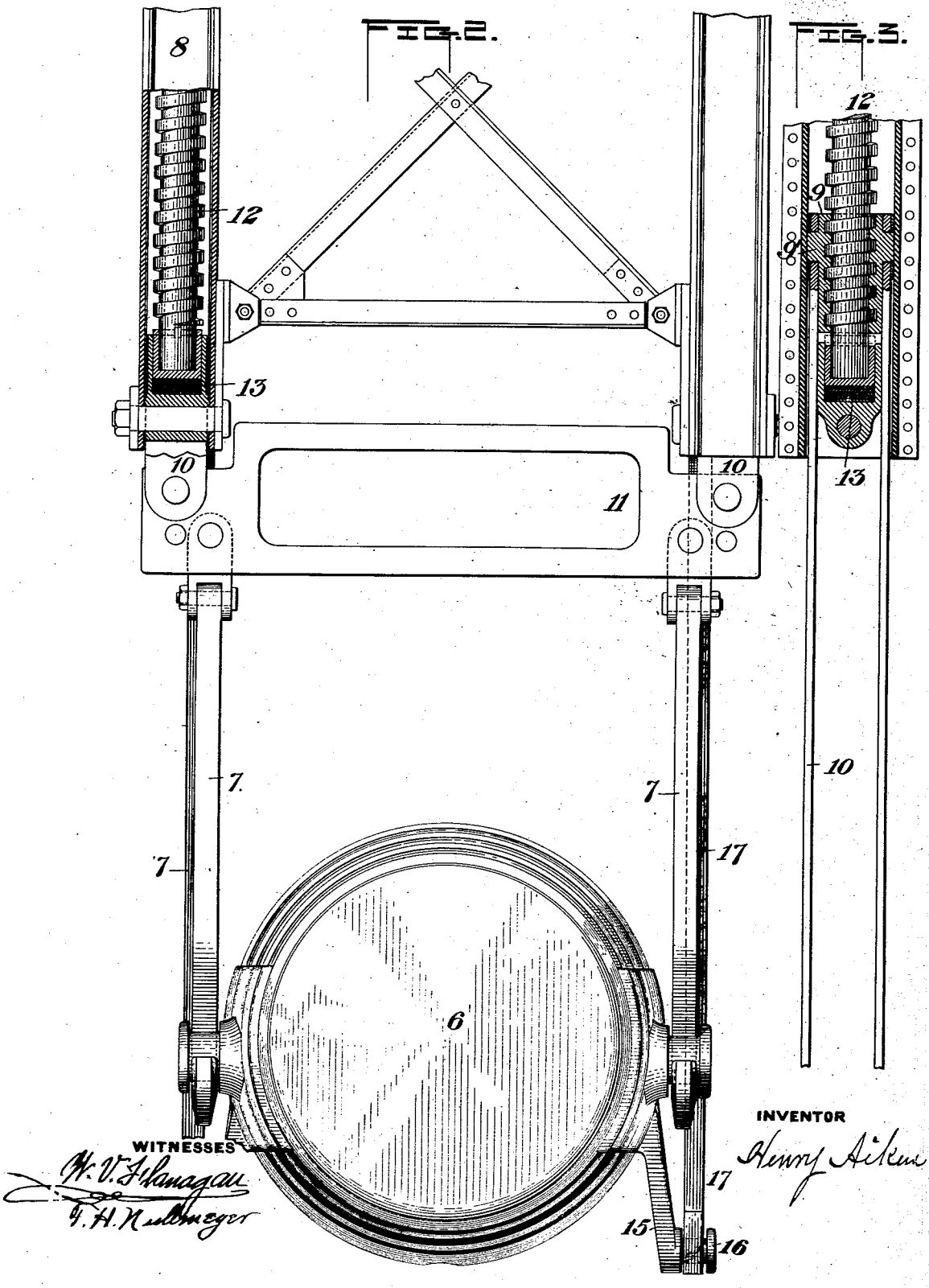

WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY AIKEN, OF PITTSBURG, PENNSYLVANIA.

MECHANISM FOR OPERATING LADLES.

SPECIFICATION forming part of Letters Patent No. 564,770, dated July 28, 1896.

Application filed July 30, 1895. Serial No. 557,652. (No model.)

To all whom it may concern:

Be it known that I, HENRY AIKEN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ladle-Operating Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows in side elevation an electric traveling crane provided with my improved ladle-operating apparatus. Fig. 2 is an end elevation thereof, and Fig. 3 shows in vertical section the nut-and-screw mechanism which I employ for lifting the ladle.

In the drawings, 2 represents the bridge or jib of a crane movably mounted upon a track 3 and carrying a trolley 4. The trolley is provided with a motor 5 for moving it along the bridge, and the bridge has also a motor (not shown) for moving it on its track. These parts may be of any suitable construction and do not require to be further described.

6 is the ladle carried by pivoted or swinging hangers 7, having hooks which detachably engage opposite trunnions on the ladle.

8 8 are casings or guide-frames which extend downwardly from the trolley and serve as guides for vertically-movable nuts 9, one of which is contained within each casing and which are formed with opposite trunnions or pins 9′, from which depend hangers or links 10, connected at their lower ends to the cross-head 11 at the upper end of the hooked hangers 7. The nuts 9 are set upon upright shafts 12, which are contained within the guide-frames 8, are journaled at their lower ends upon steps 13, and at their upper ends are provided with gear-wheels 14, mechanically connected with a suitable motor on the trolley, so that the screw-shafts may be rotated and the nuts caused to travel up or down on the same within the casings. This mechanism is substantially the same as that for which I have obtained Letters Patent No. 507,303, dated October 24, 1893.

By rotating the screw-shafts in one direction the nuts are raised and the ladle lifted, and by rotating them in the opposite direction the ladle is lowered.

For the purpose of tipping the ladle, (and it is to this that my invention principally relates,) I provide arms 15, which project tangentially from opposite sides of the ladle and have at the ends lugs 16.

17 17 are rigid stops or posts which extend downwardly from the casing 8, and have forked lower ends situated in the line of motion of the lugs 16, so that when the ladle is lifted the lugs shall engage the stops, as shown in Fig. 1 by full lines. After the lugs have thus engaged the stops the further lifting of the ladle will force it to tip on the axis of its trunnions until it assumes successively the positions shown by the dotted lines B and by full lines, and when in the last-named position the contents of the ladle are poured out. When the ladle is lowered, it will swing back again into a horizontal position, as shown by the dotted lines C. The action of the ladle in tipping to discharge its contents and in righting is therefore entirely automatic.

The apparatus above described forms a very efficient means for manipulating the ladle, enabling it to be carried to the position desired, and then to be tipped, so as to discharge its contents, these operations being performed automatically and by very simple and reliable mechanism.

I claim—

1. In ladle-lifting mechanism, the combination with a trolley, of a guide-frame projecting downwardly therefrom, lifting mechanism guided by the frame and carrying swinging hangers, a ladle having trunnions supported by the hangers, a rigid stop fixed to the frame and a projection on the ladle which engages the stop when the ladle is lifted, whereby the ladle is tipped; substantially as described.

2. In ladle-lifting mechanism, the combination of a rotary screw-shaft and a nut, swinging hangers carried thereby, a casing or frame for the screw-shaft, a rigid stop depending from the casing or frame and a projection on the ladle adapted to engage said stop; substantially as described.

In testimony whereof I have hereunto set my hand.

HENRY AIKEN.

Witnesses:
W. V. FLANAGAN,
H. D. MESKIMEN.