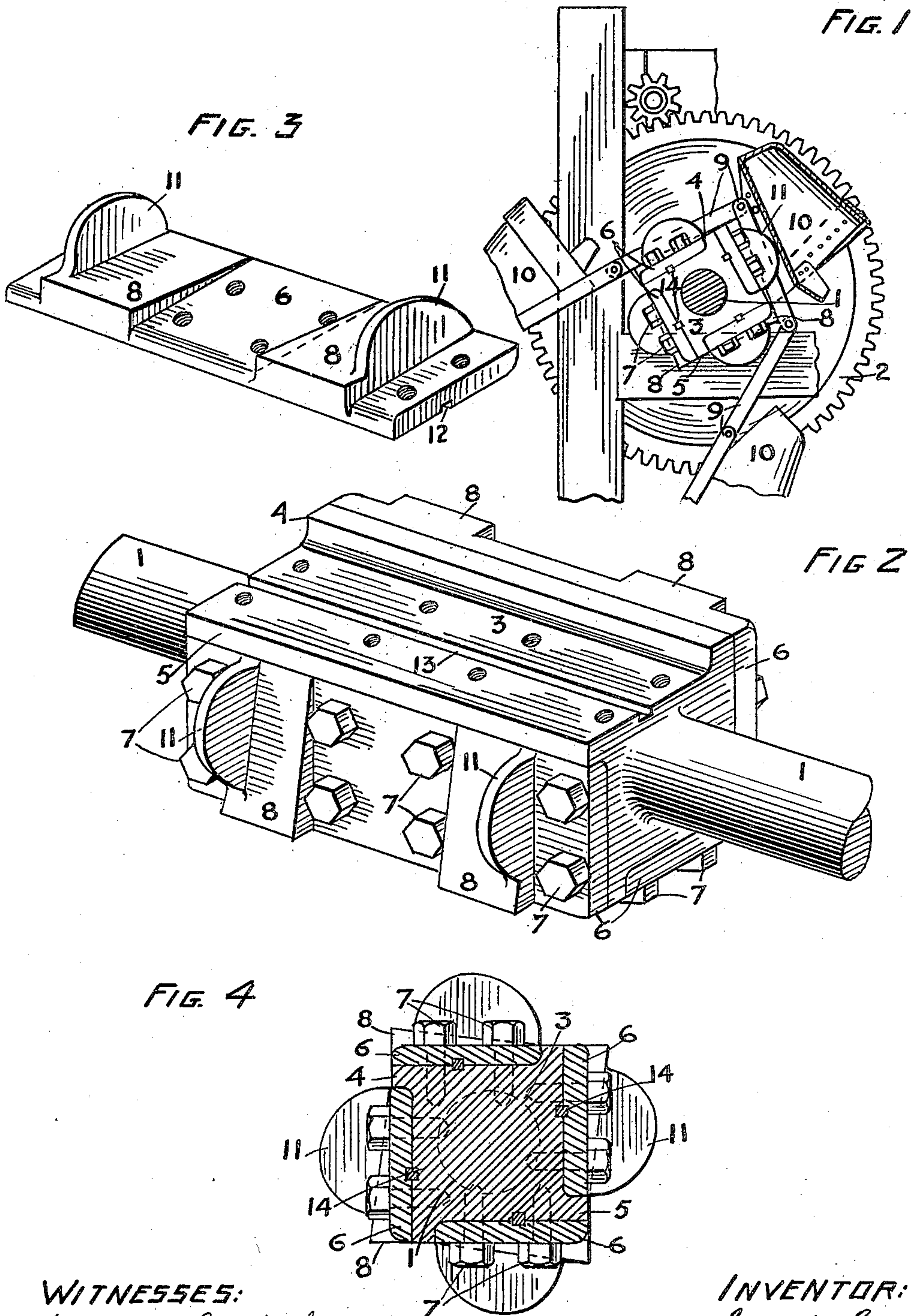


No. 822,601.

PATENTED JUNE 5, 1906.

J. H. GRAY.
TUMBLER FOR BUCKET ELEVATORS.

APPLICATION FILED AUG. 10, 1905.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES H. GRAY, OF SAN FRANCISCO, CALIFORNIA.

TUMBLER FOR BUCKET ELEVATORS.

No. 822,601.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed August 10, 1905. Serial No. 273,515.

To all whom it may concern:

Be it known that I, JAMES H. GRAY, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Tumblers for Bucket Elevators, of which the following is a specification.

This invention relates to tumblers for bucket elevators, and is of especial value for elevators used in dredges, the object of the invention being to provide a tumbler in which the parts exposed to wear can be very readily removed and substituted by new parts, thus greatly lessening the expense of maintenance of the tumbler.

A further object of the invention is to provide a construction by means of which the connections of such removable parts with the main body shall not be required to stand the strain of the chain upon the tumbler.

In the accompanying drawings, Figure 1 is a vertical section of the upper portion of a bucket elevator, showing the upper tumbler in side elevation. Fig. 2 is a perspective view of the tumbler detached, one of the wearing-plates being removed. Fig. 3 is a similar view of the wearing-plate detached. Fig. 4 is a central cross-section of the tumbler.

Referring to the drawings, 1 represents the upper shaft of a bucket elevator, having thereon a gear-wheel 2, by which it is driven, said shaft revolving in suitable bearings in the frame of the elevator. Formed in one piece with said shaft is the body of the tumbler 3, which has four equal and symmetrical sides arranged at right angles to each other. The forward portion of each side is raised to form a shoulder 4 5, and against said shoulder rests a removable wearing-plate 6, which is secured to the main body of the tumbler by means of screws 7, of which there are here shown eight. Said plate contains two raised inclined wearing-surfaces 8, against which the links 9, connecting the buckets 10, contact in the rotary movement of the tumbler and upon which at the outer sides of said raised surfaces are formed guiding ears or plates 11, preferably rounded at the top, on the inner side of which the links pass over said raised wearing-surfaces 8. The upper edges of said ears 11 slope upward rearwardly, thereby assisting in replacing the links upon the surfaces 8 should there be a tendency for said links to move laterally outward. Said wearing-plates 6 are guided and

held in place by means of longitudinal grooves 12 13, formed, respectively, in the body of the tumbler and in the under side of the plate, and steel feathers or keys 14 are inserted in said grooves when brought into registry with each other. These keys, together with the shoulders 5, transmit the strains from the body of the tumbler to the links and remove them from the screws 7. The plates 6 are made thicker at their rear sides to compensate for the greater wear which they undergo at that point. When one or more of the wearing-plates are found to be worn so much that the tumbler does not take hold of the chain and impart movement thereto, instead of removing the whole tumbler, as heretofore, the defective plates alone may be removed and substituted by new ones, thus greatly reducing the expense.

One of the greatest troubles experienced in operating dredges with bucket elevators is the tumbler becoming loose upon its shaft. By the present construction this is avoided, because the body of the tumbler is formed in one piece with the shaft, the whole being made from a single bloom, which is drawn out and hammered and then turned to form the trunnions or bearings. It is in conjunction with this construction that the removable plates are used, for it is by reason of the plates being removable that it is permissible to make the tumbler-body and the shaft in a single integral piece at much less expense.

I claim—

1. In a bucket-elevator tumbler, the combination, with the main body of the tumbler, of wearing-plates provided with guides for the bucket-links and connections between said plates and tumbler, said tumbler being provided with means for removing the strains thereon from the connections, substantially as described.

2. In a bucket-elevator tumbler, the combination of the main body of the tumbler having the forward portions of its sides raised to form abutments or shoulders, plates engaging said shoulders, and means for securing said plates to said tumbler, substantially as described.

3. In a bucket-elevator tumbler, the combination with the main body of the tumbler having the forward portions of its sides raised to form shoulders or abutments, plates resting against said abutments and having guides raised from said plates, and extending transversely to the axis of the tumbler, and means

for securing the plates to the body of the tumbler, substantially as described.

4. In a bucket-elevator tumbler, the combination of the body of the tumbler, wearing-
5 plates on the sides of the tumbler, one of the faces of each plate and the tumbler in contact with each other having a longitudinal groove, and a feather or key in said groove preventing forward or rearward movement of the
10 plate upon the tumbler-body, and means for securing the plates to the tumbler, substantially as described.

5. In a bucket-elevator tumbler, the combination of the body of the tumbler having
15 the forward portions of its sides raised to form shoulders or abutments, plates resting upon said sides behind said abutments, one of the faces in contact with each plate and the tumbler being formed with a longitudinal
20 groove, a key or feather in said groove pre-

venting forward or rearward movement of the plate upon the face, and means for holding the plates to the tumbler, substantially as described.

6. In a bucket-elevator tumbler, the combination of a tumbler-body having polygonal
25 faces and trunnions or bearings at the sides or ends of the body, said trunnions or bearings being formed all in one piece with the body, and removable wearing-plates upon
30 the faces of the body, said plates being provided with suitable guides for the bucket-links, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing
35 witnesses.

JAMES H. GRAY.

Witnesses:

EDITH WOODWARD,
BESSIE GORFINKEL.