

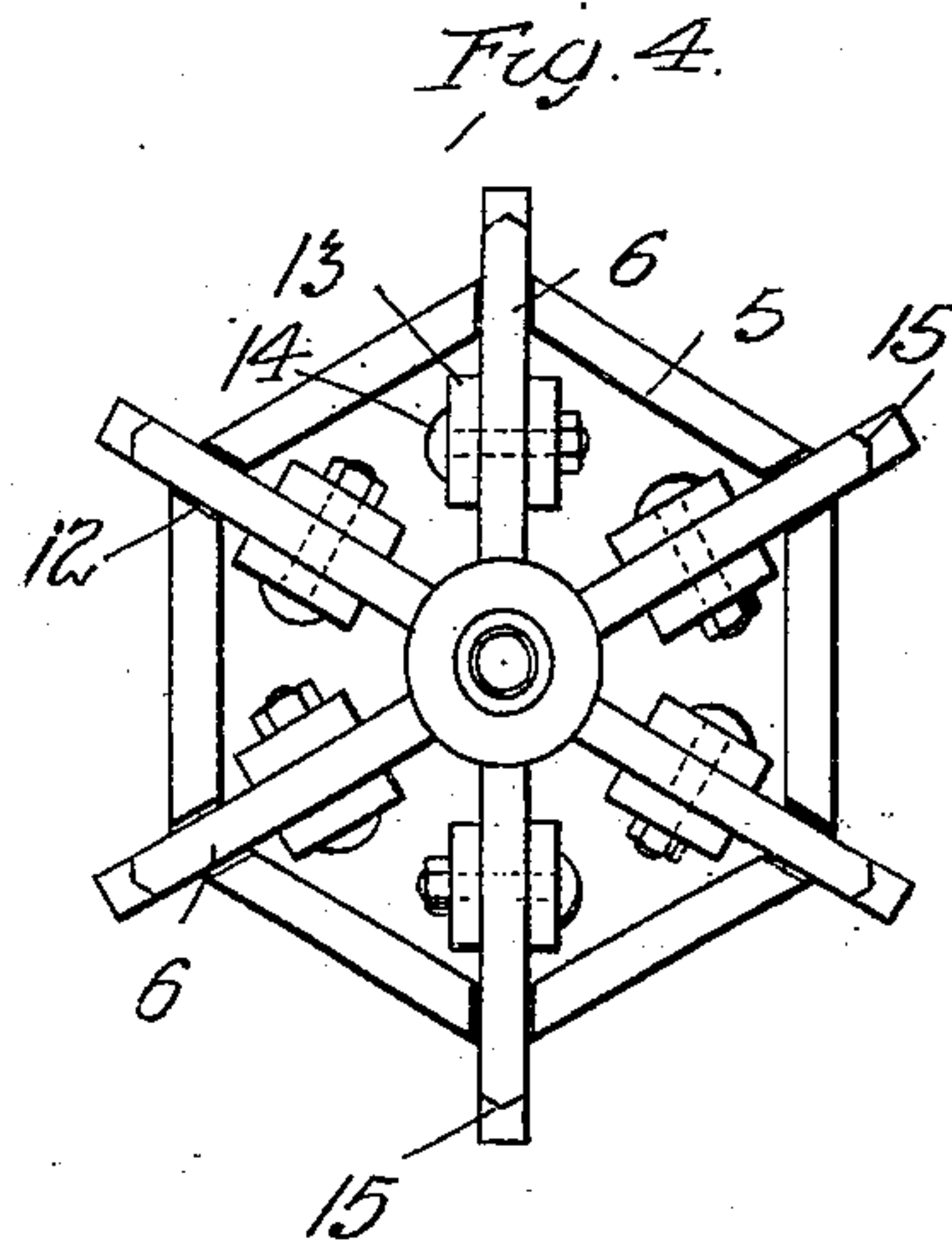
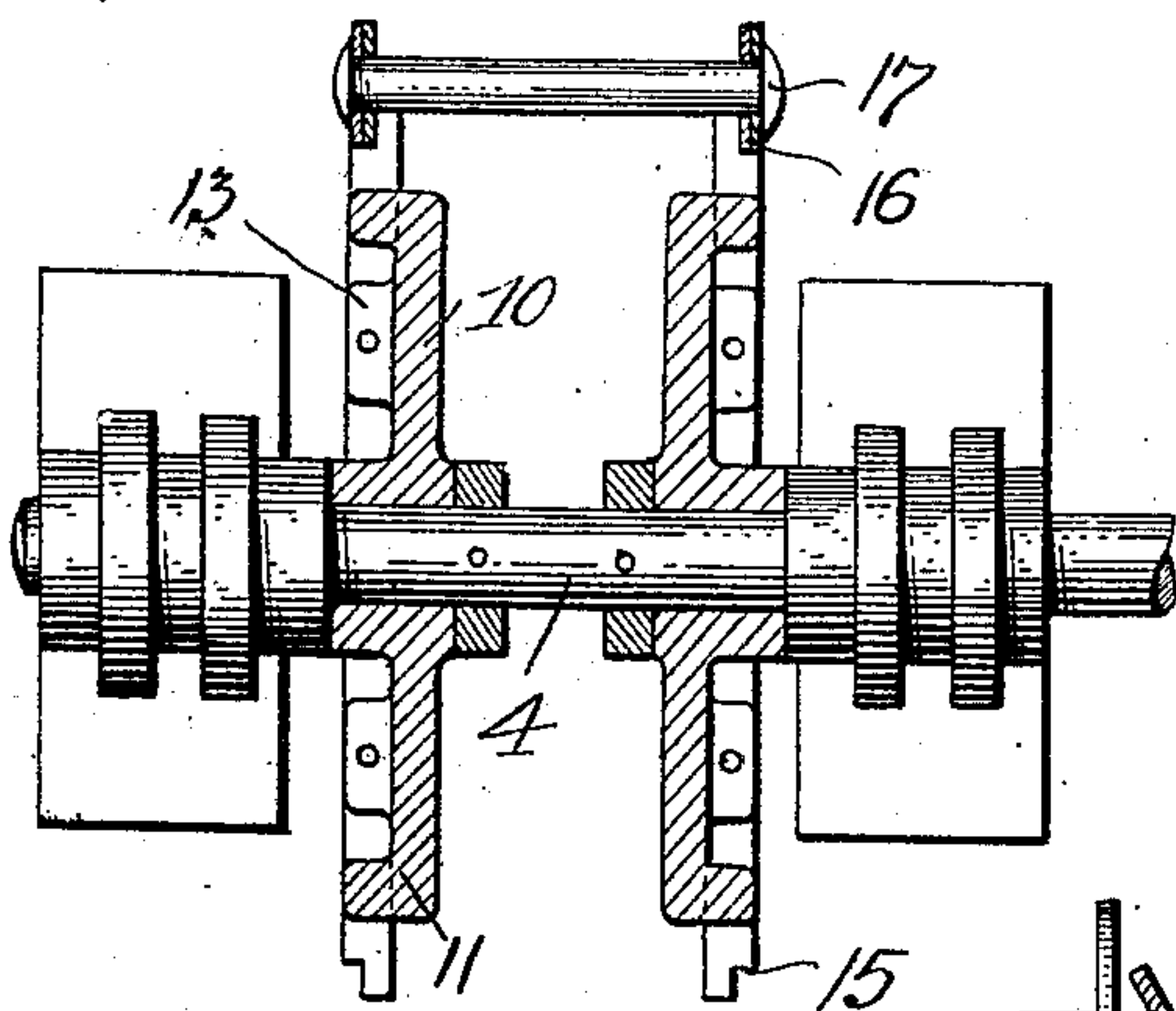
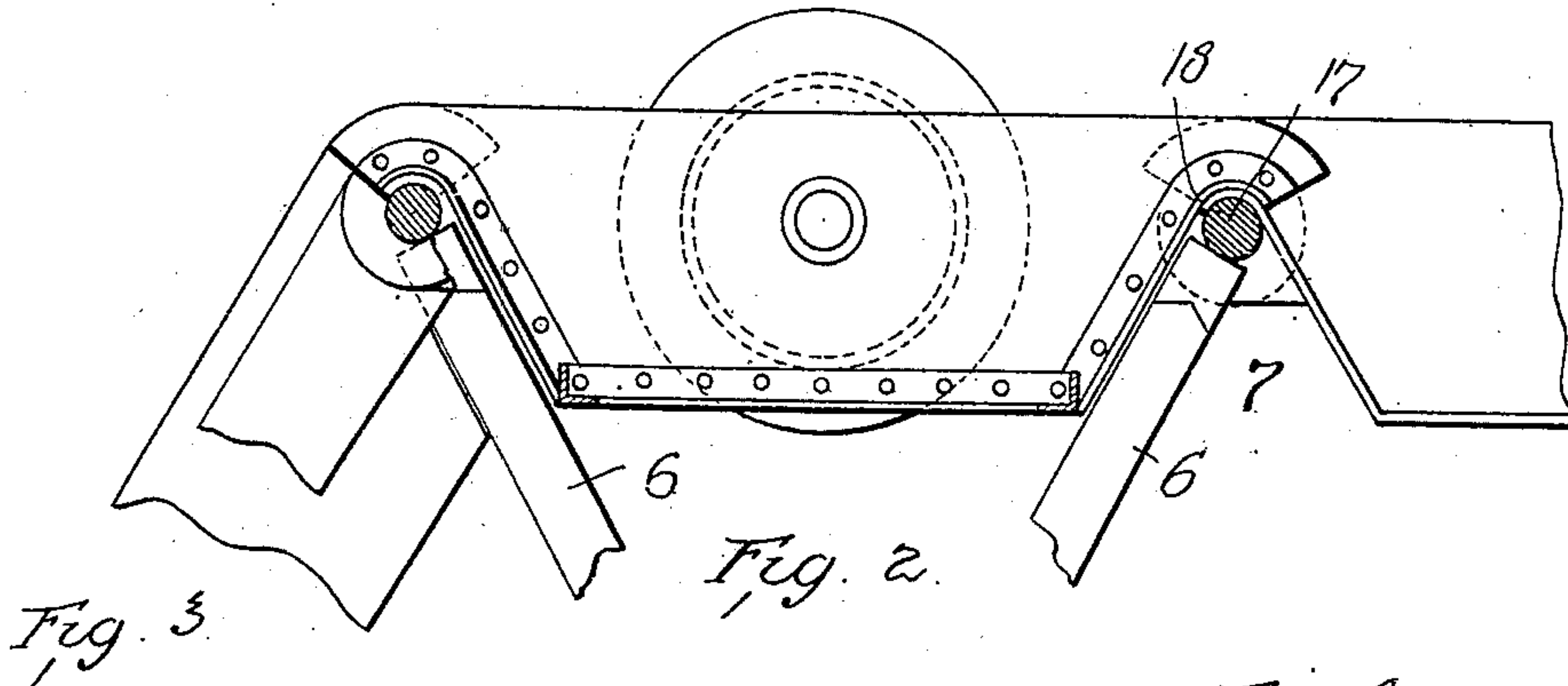
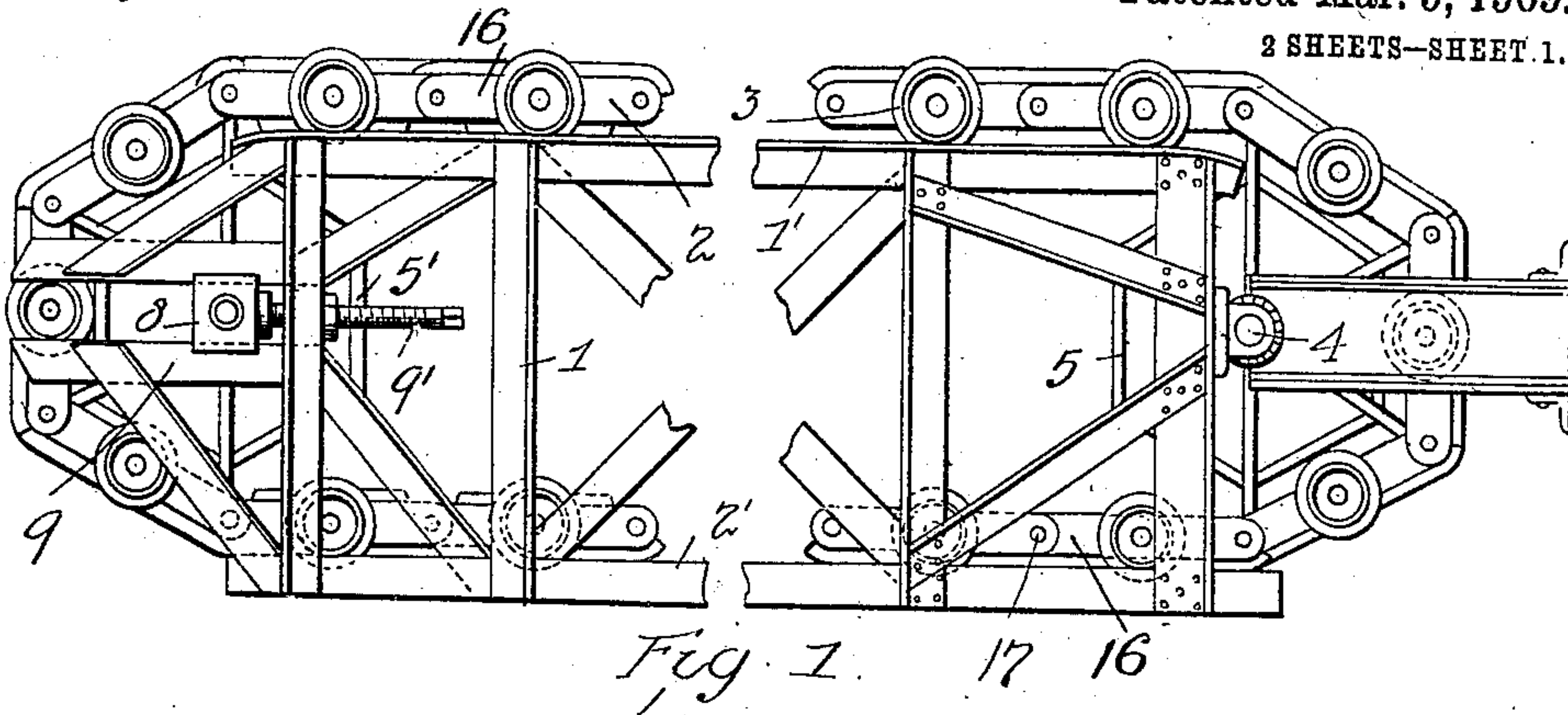
E. S. BENNETT.  
MINING MACHINERY.

APPLICATION FILED MAR. 15, 1906.

Patented Mar. 9, 1909.

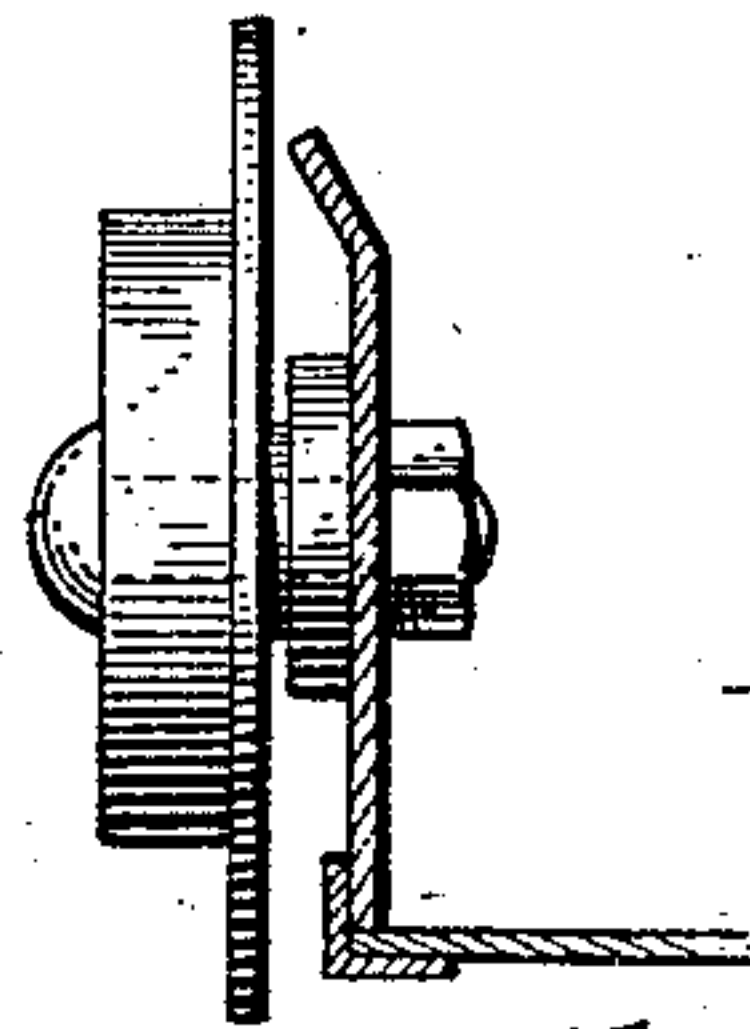
2 SHEETS—SHEET 1.

914,917.



Attest:  
C. S. Mason  
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Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 6.

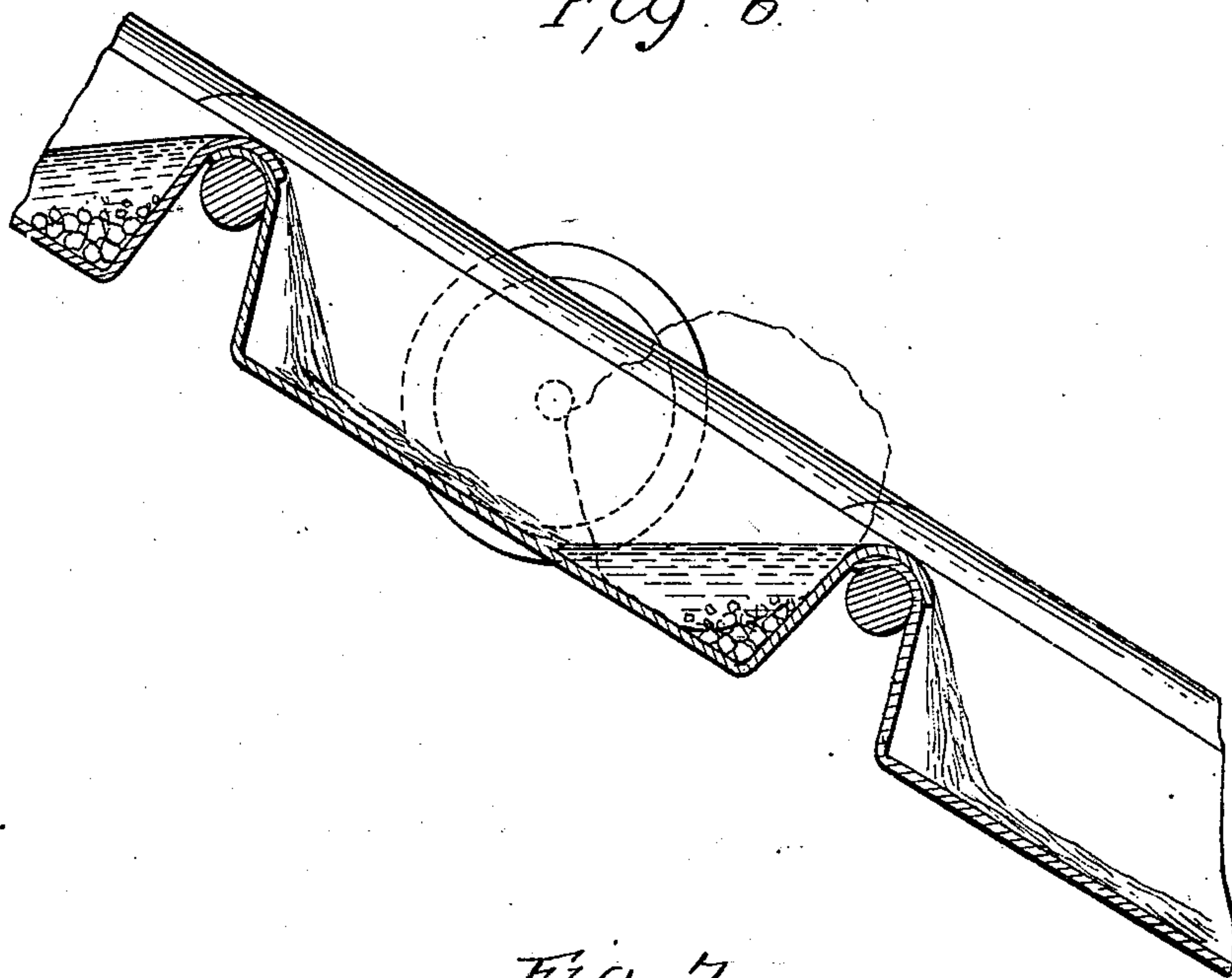
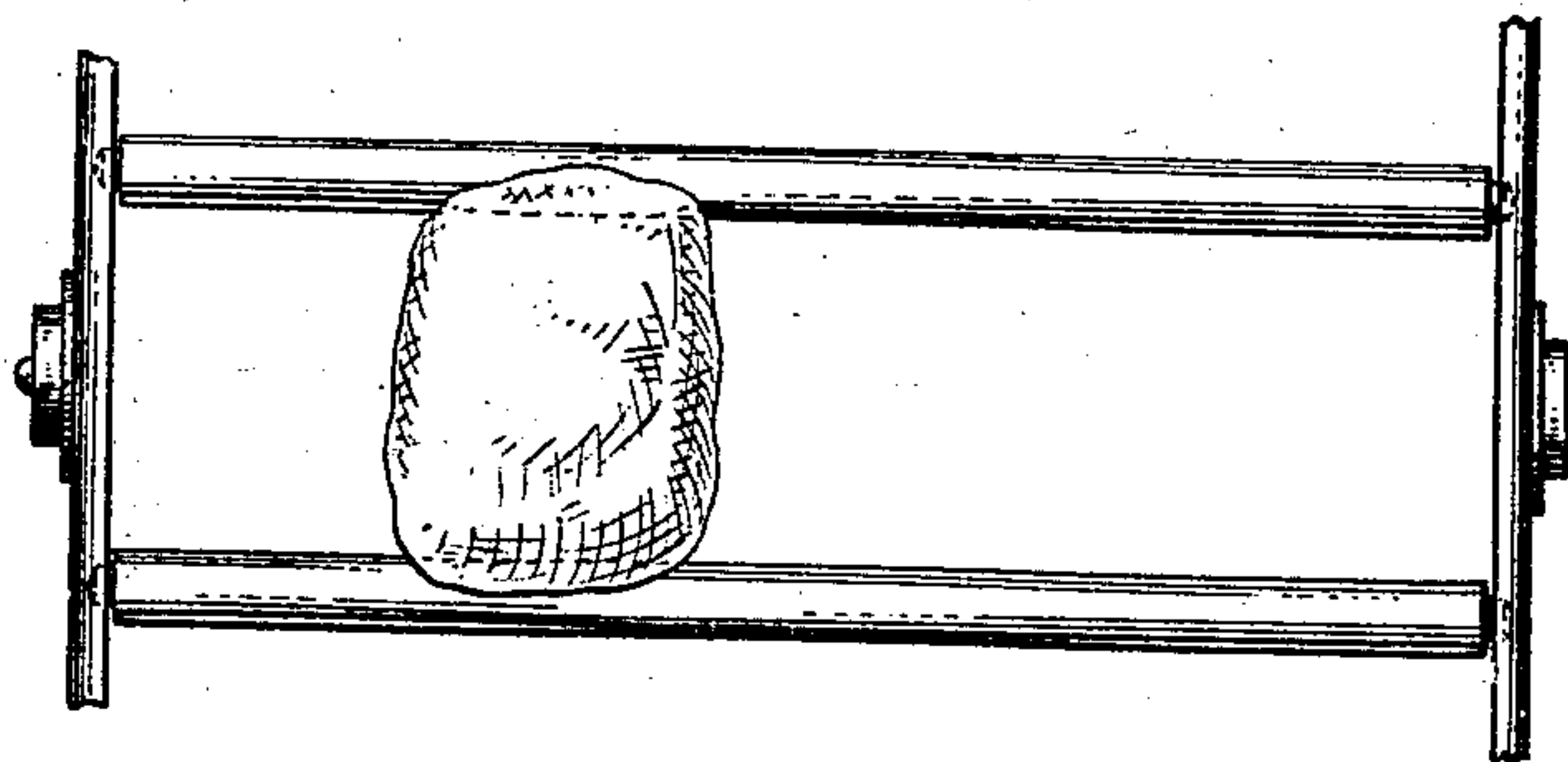


Fig. 7.



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# UNITED STATES PATENT OFFICE.

ERASTUS S. BENNETT, OF NEW YORK, N. Y.

## MINING MACHINERY.

No. 914,917.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed March 15, 1906. Serial No. 306,211.

*To all whom it may concern:*

Be it known that I, ERASTUS S. BENNETT, citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Mining Machinery, of which the following is a specification.

My invention relates to mining or excavating machinery and particularly to the carrier for the tailings.

In carrying out my invention I aim to secure simplicity and lightness in the structure and for this purpose I dispense with the sprocket chains and sprocket wheels ordinarily employed for operating the carrier and utilize instead the carrier itself as transmission means for the power from one end of the carrier to the other.

The invention consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side view of so much of a carrier and its supporting beam or frame work therefor as is necessary to a clear understanding of the novel features of my invention. Fig. 2 is an enlarged view of a portion of the carrier and a portion of one of the drive and directing wheels therefor. Fig. 3 is a sectional view through one of the drive or directing wheels with a portion of the carrier in connection therewith. Fig. 4 is a detail side view of one of the drive or directing wheels for the carrier. Fig. 5 is a detail sectional view of a part of one of the carrier buckets with the carrying wheel therefor. Figs. 6 and 7 are views of details.

In these drawings 1 indicates the boom or frame which extends upwardly at an inclination from the excavator or mining machine, and 2 represents generally a carrier adapted to move on the said boom for conveying the tailings from the amalgamating tank or other operating member to the point of discharge for the said tailings. This boom or frame is made up of structural iron or channel beams and comprises upper and lower tracks 1', 2' for the carrier wheels 3. The boom is supported pivotally on the main frame at 4 and at this point also a directing wheel 5 is located, over and around which the flexible carrier passes. This directing wheel is fixed on the shaft and said shaft is driven in any suitable manner by means of a sprocket wheel and sprocket chain or by

any other suitable means. It will be understood that the boom or frame extends upwardly at an inclination from this point and that the wheel 5 acts as a driver for the flexible carrier which passes up and around the boom. For this purpose the wheel 5 is provided with arms 6 extending radially therefrom, which arms are adapted to enter the spaces 7 between the buckets, as indicated at Fig. 2, to bear upon the inclined ends of the buckets and thus act to propel the chain of buckets or carrier along the boom or frame work.

The wheel 5 is duplicated at the upper end of the carrier as shown at 5' Fig. 1, and this wheel bears in a sliding box 8 movable in guide-ways 9 of the boom or frame, it being adjusted by the screw 9' so that the desired tension may be placed upon the chain or carrier. Each of the wheels 5 and 5' is constructed as indicated in Figs. 3 and 4, that is a disk portion 10 is secured near each bearing of the shaft 4, the said disks having peripheral flanges 11 provided with notches 11' which receive the radial arm or blades 6, the notches being indicated at 12. These arms also fit between lugs 13 extending out from the faces of the disks and to the lugs the arms are bolted, as indicated at 14. The outer ends of the arms are notched to present inverted V shaped bearing edges 15 adapted to afford bearings for the links 16 which connect together the buckets, each link being riveted to one of the buckets and the said links being pivotally connected to each other as at 17.

It will be seen from Fig. 2 that the bolts or pivots 17 connecting the links pass under the ends of the buckets which have curved extensions 18 extending over the said connecting pins or bars 17 so that a water-tight joint is formed here and any material passing from one bucket as it goes up the incline will be caught by the next bucket below. It will be noticed further, that the ends of the buckets are inclined to correspond with the inclined relation of the radial arms in respect to each other so that as shown in Fig. 2 the buckets will fit in between the said radial arms. At the left of Fig. 2 the position of the parts is shown as the bucket begins to turn around the directing wheel, the end face of the turning bucket being then parallel with the end face of the bucket which still remains straight in relation to the length of the chain and the radial arm fitting in the space



between the two buckets and practically filling the same. By this arrangement of buckets and directing wheels the carrier itself acts as a chain transmission and thus the heavy sprocket chain and sprocket wheel heretofore employed for transmitting the power from the lower portion of the boom to the upper portion is entirely dispensed with. It will be understood that the wheel 5' at the outer end of the boom is an idler and that the power is transmitted only by the wheel at the inner end of the boom which thus acts as a driver for the carrier.

It is desirable to form a wide, capacious carrier, which will carry the rounded stones found in placers, at a steep angle, without permitting them to roll down toward the receiving end of the carrier. Also to provide a conveyer for sufficient water (always intermittently discharged with tailings) to feed a nugget saving device situated at the lower side of the upper end of the carrier. Also, to build the carrier as light as possible and still strong enough to carry the large stones without danger of bending the buckets. Also, to protect the joint from pebbles etc. All of these are secured by this arrangement, as will be seen. The main wear is confined to an inexpensive wheel and common bolt at each bucket.

Journaling the rollers centrally of the buckets and independent of the joints between the buckets, enables me to make the hinge pins that much shorter, saving weight, and confines the wear to the small bolt which holds the wheel, and to the wheel itself—either of which can be easily replaced when worn out, which is not so with the long and comparatively heavy hinge pins, the removal of which breaks the continuity of the chain of buckets. The end of the severed chain must be held during the operation of removal and replacing such pin.

Bucket carriers are usually made by fastening the bottom of the buckets to links of a chain so that the hinge motion is at the bottom of the bucket. In this device this hinge

motion is at the top of the bucket and I am therefore enabled to get the curved lap which protects the hinge pin, strengthens the bucket and carries the overflow of water (if any) from pocket to pocket so as to equalize the water contents of the buckets, the water being fed more or less intermittently. The shape of the buckets is such as to secure the strength in every direction and also to accomplish the other objects mentioned.

I claim as my invention:—

1. In combination with the buckets, links for driving the buckets, said links being pivotally connected together, rollers for supporting the chain of buckets, said rollers being arranged intermediate of the length of the links and pins secured to the ends of the buckets and to the links and extending beyond the links to afford bearings for the rollers, said pins terminating at the inner side of the ends of the buckets, substantially as described.

2. In combination the endless chain of buckets, the links connecting the same and the wheel having arms to engage the inclined ends of the buckets and having notched end portions to engage the links, substantially as described.

3. In combination with the carrier chain, a wheel to engage the same, comprising a disk having a laterally extending circumferential flange and the lugs, and an arm passing through a notch in the flange and secured to the lugs, substantially as described.

4. In combination in buckets, the links connected thereto, the hinge pins for the links and a wheel having arms engaging simultaneously the links, the hinge pin and the inclined ends of the buckets, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

ERASTUS S. BENNETT.

Witnesses:

M. L. JUSTIN,  
H. N. MCKAY.