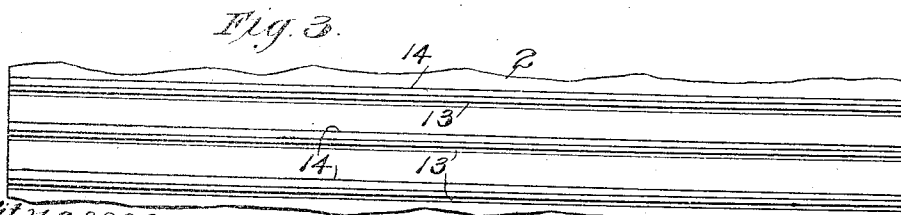
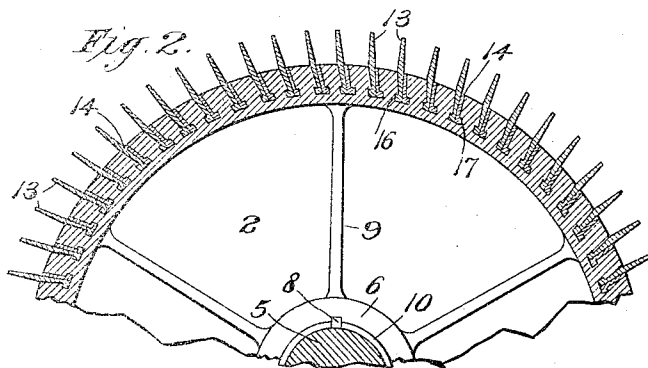
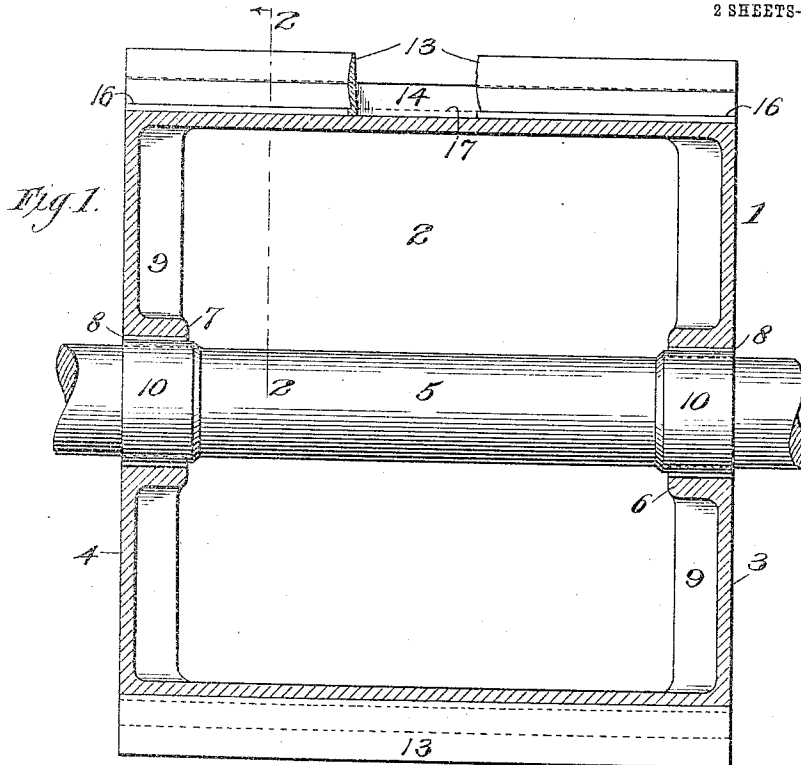


E. A. JONES.
BEATING ROLL FOR REFINING ENGINES.
APPLICATION FILED NOV. 30, 1908.

986,540.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.



Witnesses:
P. S. Phelps
A. F. Kehoe

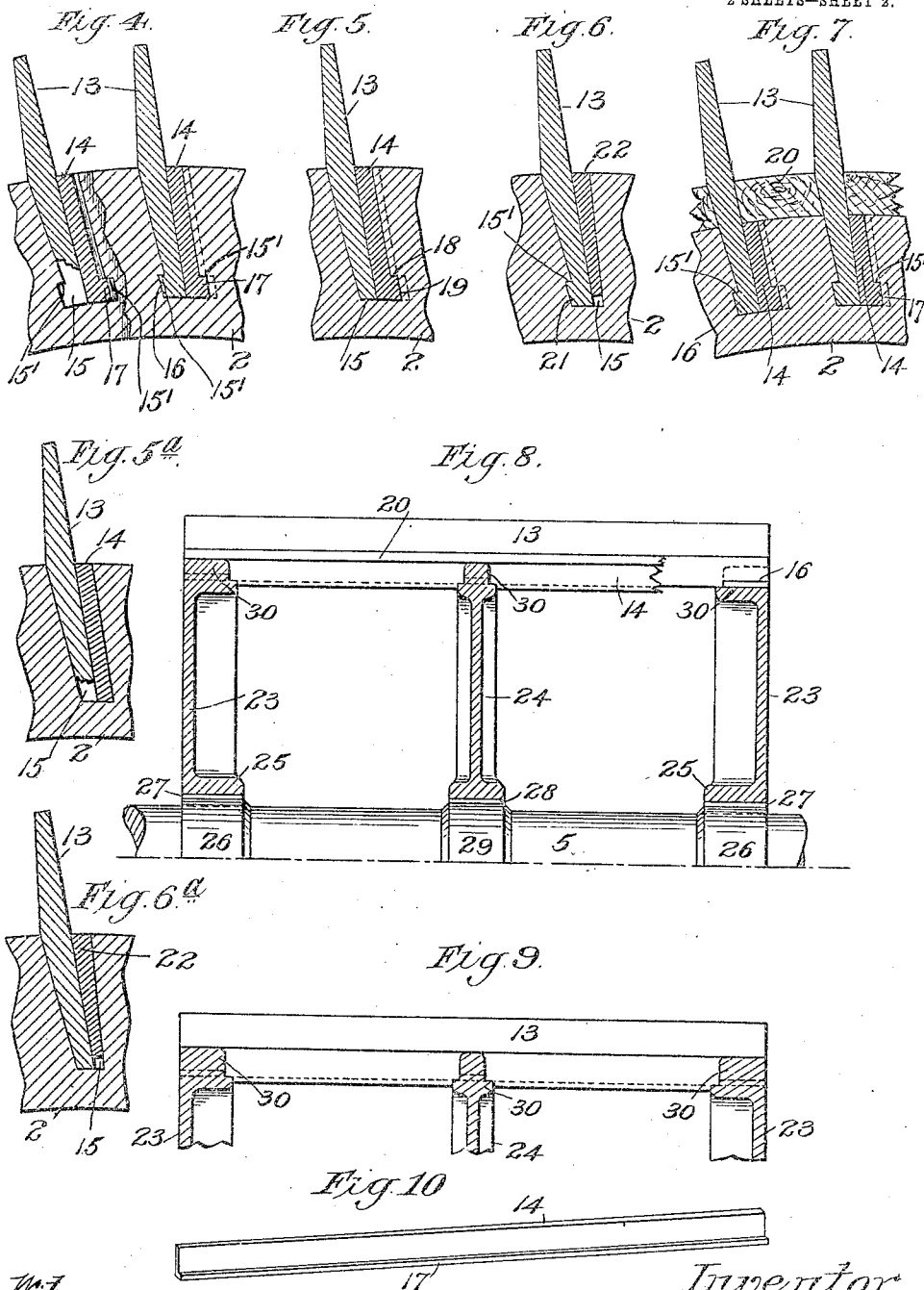
Inventor:
Edward A. Jones
By: H. H. Jones: Philip James Rice Kennedy

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BEATING ROLL FOR REFINING ENGINES.
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2 SHEETS—SHEET 2.



Witnesses:
P. B. Philipp
O. A. Kehoe

Inventor
Edward A. Jones
by his Attys.
Philipp, Jones, Rice & Kinnear

UNITED STATES PATENT OFFICE.

EDWARD A. JONES, OF PITTSFIELD, MASSACHUSETTS.

BEATING-ROLL FOR REFINING-ENGINES.

936,540.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed November 30, 1908. Serial No. 465,152.

To all whom it may concern:

Be it known that I, EDWARD A. JONES, a citizen of the United States, residing at Pittsfield, county of Berkshire, and State of Massachusetts, have invented certain new and useful Improvements in Beating-Rolls for Refining-Engines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in rolls for washing, beating and refining engines used in the treatment of paper pulp, the improvement being designed especially for rolls of the class known in the art as bandless rolls.

It is the object of the present invention to provide an improved roll of such type having improved means which are simple, cheap and durable for locking the grinding bars or knives in such roll.

With these objects in view, a detailed description of the invention will be given in connection with the accompanying drawings, in which:—

Figure 1 is a longitudinal section of the improved beating roll in the preferred form; Fig. 2 is a cross section of the same taken on line 2—2 of Fig. 1, certain parts being broken away; Fig. 3 is a top view of a portion of the roll with the grinding bars or knives in place; Figs. 4, 5, 5^a, 6, 6^a, and 7 are cross sectional views on an enlarged scale showing various constructions for locking the grinding bars or knives in position. Fig. 8 is a longitudinal section of a modified construction of beating roll; Fig. 9 is a similar view showing a modification of the construction shown in Fig. 8, and Fig. 10 is a view of one of the wedges employed for locking the grinding bars or knives in position.

Referring now to the drawings, and especially to Figs. 1 to 7, the numeral 1 indicates a beating roll which, in this particular construction, comprises a hollow cylinder or drum 2 having ends or heads 3, 4. This cylinder or drum 2 is fast on a shaft 5, which is driven from any suitable source of power (not shown). The ends of heads 3, 4 of the cylinder or drum 2 are provided with inwardly extending flanges or collars 6, 7 fitting around bosses 10 which, with the flanges or collars 6, 7, are slotted to receive keys 8, by which the cylinder or drum 2 is fastened on the shaft 5 so as to turn there-

with. Ribs or braces 9 are or may be provided on the interior of the cylinder or drum 2 for strengthening the same.

The cylinder or drum is provided with a number of longitudinal slots for the reception of the grinding bars or knives 13 and wedges 14 which, co-acting therewith, and with the walls of the slots 15, lock the bars or knives 13 to the drum or cylinder. The bars or knives 13, slots 15 and wedges 14, which will now be described in detail, are each substantially equal in length to the drum or cylinder, and the bars or knives or the wedges, or both, will preferably be provided with projections which engage corresponding shoulders formed in the walls of the slots, but in these respects and in others variations may be made in construction without departing from the invention.

Referring first to the particular constructions shown in Figs. 2 and 4, each of the slots 15 is under-cut on opposite sides of its base to form shoulders 15', while each grinding bar or knife 13 has, at the base of its outer face a projection 16. The projection 16 is formed by cutting away the face of the bar or knife, and engages with one of the shoulders 15' in the slot 15, the opposite or inner face of the grinding bar being plain. The locking wedge 14 in this particular construction is formed with a projection 17 at the base of its outer face, which engages the other shoulder 15' in the slot 15, the other or inner face of the wedge being plain. The wedges in this construction are formed to taper longitudinally, as shown in plan in Fig. 3, and as indicated in dotted lines in Fig. 4, and one wall of the slot 15 is tapered correspondingly. In these constructions the projections on the wedge and on the grinding bar and the shoulders in the slots extend the full length of the cylinder, the locking wedges being driven in from one end thereof. This construction forms a very efficient one for locking the grinding bars or knives in position, and the employment of the locking wedges, which taper longitudinally, allows for a very cheap and strong construction of roll and bars. Furthermore, any injured bar or bars may be easily and readily removed from the roll without disturbing the remaining bars, or removing the roll from the machine.

In Fig. 5 is shown a modification of the construction shown in Fig. 4. In this construction, the slot 15 is under-cut to form

but one shoulder 18, which shoulder is located at the base of the slot and extends throughout its length. The longitudinally tapering locking wedge 14 is provided on its outer face with a projection 19, which engages this shoulder. The grinding bar, in this instance, has both of its faces plain, and the inner face of the locking wedge is plain.

In the construction shown in Fig. 5^a, both the grinding bar or knife 13 and the wedge 14 have both of their faces plain, and the slot 15 is not under-cut. The wedge 14 is tapered longitudinally, and one wall of the slot is tapered correspondingly.

In Fig. 7 a modification of the construction shown in Fig. 4 is shown. In this construction the shell of the cylinder is of somewhat less thickness than in the construction shown in Figs. 4 and 5^a, an additional filling block of wood or other suitable material 20, between each two grinding bars or knives 13 and above the tops of the locking wedges 14, serving as an additional holding means for keeping the wedges and bars in position. The wedges in this construction taper longitudinally of the cylinder as in the construction previously described and shown in Fig. 4, and their form and the form of the bars or knives and the slots, in cross section, is the same as that described in connection with said figure.

In Fig. 6 a modification of the locking wedges is shown. In this construction the slot is under-cut to form one shoulder at its base, with which shoulder a projection 21, formed at the base of the outer face of the grinding bar 13, engages. The other or inner face of the grinding bar is plain, and there is provided a locking wedge 22, which locking wedge has both of its faces plain. This locking wedge in this particular instance tapers vertically, and one wall of the slot tapers vertically correspondingly, the wedge being driven into the slot from above, thus locking the grinding bar securely in position.

In the construction shown in Fig. 6^a, both the grinding bar or knife 13 and the wedge 22 are formed without any projection, and the slot 15 is not under-cut. The wedge 22 tapers vertically, and one wall of the slot is formed with a corresponding taper.

The filling blocks 20, previously described with reference to Fig. 7, may obviously be used with the constructions described in Figs. 6 and 6^a, the shell of the cylinder being made of less thickness than in the latter constructions, for such purpose.

In Figs. 8 and 9, a modification of the beating roll is shown in which the cylinder or drum 2 is replaced by a plurality of spiders 23, 24 fast on the shaft 5. The spiders 23 are provided with inwardly extending flanges or collars 25 which fit bosses

26 on the shaft 5, these bosses and collars being slotted to receive keys 27 by which the spiders are locked to the shaft, spider 24 being slotted to receive a key 28 which fits in a corresponding slot on a boss 29 provided on the shaft 5. The outer circumference or periphery of each of the spiders 23, 24 is formed with flanges 30, slotted to receive the grinding bars 13 and the locking wedges. The various constructions of grinding bars or knives and the locking wedges and the slots hereinbefore described with reference to Figs. 1 to 7, may be employed with the construction of beating roll as shown and described in Figs. 8 and 9, and it will not be necessary to describe them again.

In Fig. 8 the grinding bars or knives are shown seated as in Fig. 7, filling blocks 20 of wood or other suitable material hereinbefore described in connection with Fig. 7 being placed between the grinding bars or knives and above the wedges, whereas in the construction shown in Fig. 9, the slots in the flanges 30 of the spiders have a depth sufficient to allow the constructions hereinbefore referred to in connection with Figs. 4 to 6^a, to be used.

What I claim is:—

1. A bandless roll for engines of the character described, comprising a cylinder provided with longitudinal slots, grinding bars seated in said slots, and separate tapered locking wedges coacting with said bars and the walls of the slots to hold the former in position in said slots.

2. A bandless roll for engines of the character described comprising a cylinder provided with longitudinal slots, grinding bars seated in said slots, separate tapered locking wedges coacting with said bars and the walls of the slots to hold the former in position in the slots, and filling blocks positioned between the bars above said wedges.

3. A bandless roll for engines of the character described, comprising a cylinder provided with longitudinal slots, grinding bars seated in said slots, and locking wedges tapering longitudinally and coacting with said bars and the walls of the slots to hold the former in position in said slots.

4. A bandless roll for engines of the character described, comprising a cylinder provided with longitudinal slots L-shaped in cross section, grinding bars L-shaped in cross section seated in said slots, and tapered locking wedges coacting with said bars and the walls of the slots to hold the former in position in the slots.

5. A bandless roll for engines of the character described, comprising a cylinder provided with longitudinal slots, said slots being under-cut at their bases to form shoulders on opposite sides thereof throughout their length, grinding bars seated in said slots and having projections engaging with

the shoulders and extending in one direction and longitudinally tapering locking wedges seated in said slots and having projections engaging the other shoulders, said wedges
5 coacting with the grinding bars and the walls of the slots to hold the former in position in the slots.

6. A bandless roll for engines of the character described comprising a cylinder provided with longitudinal slots, said slots being under-cut at their bases to form shoulders on opposite sides thereof throughout their length, grinding bars seated in said slots and having projections engaging with
10 the shoulders and extending in one direction, longitudinally tapering locking wedges seated in said slots and having projections engaging the other shoulders, said wedges

coacting with the grinding bars and the walls of the slots to hold the former in position in the slots, and holding blocks positioned between the bars above said wedges. 20

7. A bandless roll for engines of the character described, comprising a grinding bar support provided with longitudinal slots, 25 grinding bars seated in said slots, and separate tapered locking wedges coacting with said bars and the walls of the slots to hold the former in position in said slots.

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses. 30

EDWARD A. JONES.

Witnesses:

ARTHUR DALE,
FRANK E. BONNEY