July 8, 1924. 1,500,170

W. WERNER

PAPER MAKING MACHINERY

Filed Sept. 13, 1923

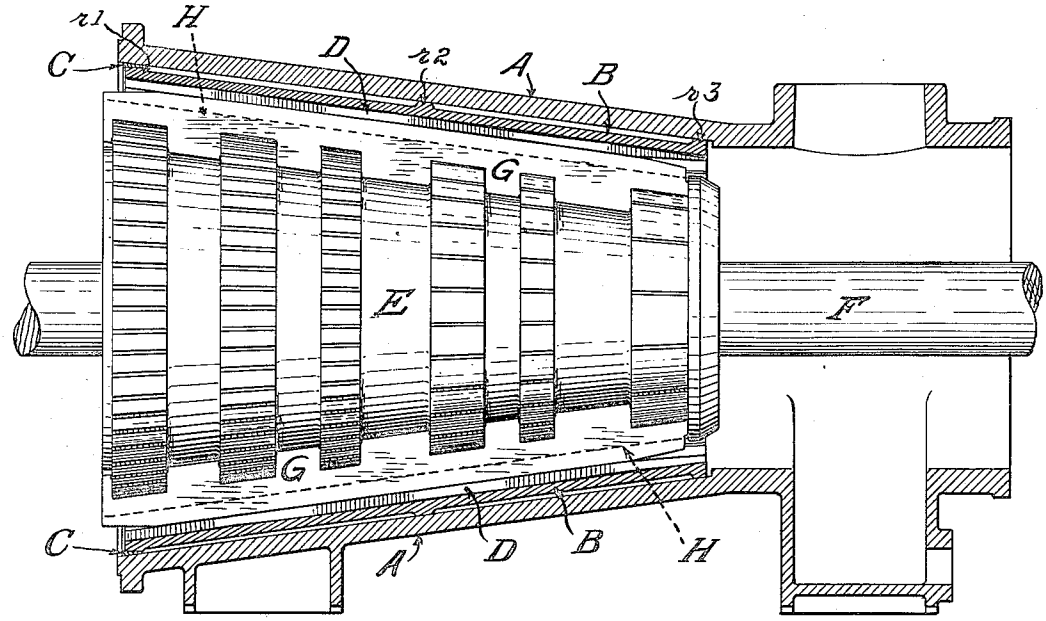


Fig. 1.

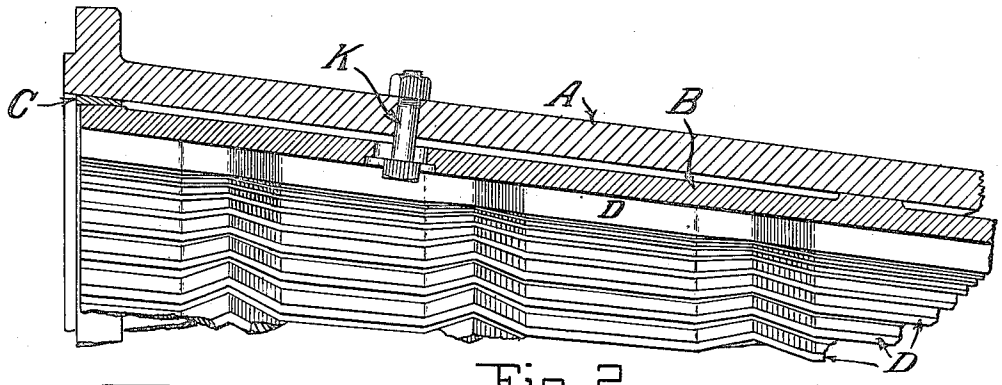


Fig. 2.

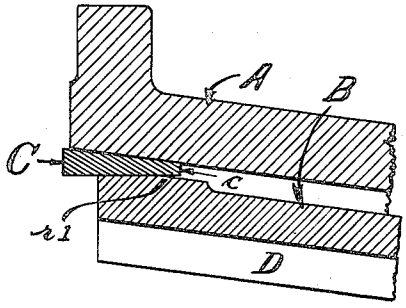


Fig. 3.

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UNITED STATES PATENT OFFICE.

WALTER WERNER, OF HOOSICK FALLS, NEW YORK, ASSIGNOR TO THE NOBLE & WOOD MACHINE CO., OF HOOSICK FALLS, NEW YORK, A CORPORATION OF NEW YORK.

PAPER-MAKING MACHINERY.

Application filed September 13, 1923. Serial No. 662,402.

To all whom it may concern:

Be it known that I, WALTER WERNER, a citizen of the United States, residing at Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Paper-Making Machinery, of which the following is a specification.

This invention relates to paper making machinery.

The object of this invention is to provide a simple but effective means for fitting and locking a one piece cast metal shell liner in the shell of a Jordan engine.

The Jordan engine, commonly called a "Jordan", consists of a stationary shell conical in shape and bored on the inside on a taper, the inside being lined with knife bars which coact with other knife bars mounted on the periphery of a rotating conical core or "plug" mounted concentrically with the engine shell, and adjustable axially.

The Jordan shell is usually lined with knife bars which are held in place in a spaced relation to each other by means of wooden space fillers of "shell woods", and wedges. A series of metal ribs or bars are sometimes bolted inside the shell before the lining is inserted, to assist in holding the lining against displacement due to torsional strains.

When handling certain kinds of paper stock the treatment of which causes more than the usual wear on the knife bars and so makes necessary the frequent relining of the Jordan, a more substantial and more easily installed shell liner is desirable. One type of shell liner which has been used to some extent being a sectional cast metal liner having ribs or knife bars cast integral therewith, the sections being in the form of split conical rings which are wedged, or wedged and bolted into the shell in various manners. This type of shell liner while more substantial and more easily installed, has certain disadvantages which are hard to overcome. The sections being cast split conical rings are fastened in place by means of wedges driven between or into the split so as to expand the section until it becomes fast in the shell. Bolts are also used to expand the section and assist in holding it in place. With this style of liner it is almost impossible to install and maintain the various sections of the liner in accurate alignment and perfect concentricity, and when perfect alignment and concentricity is not maintained uneven treatment of the stock passing through the engine and uneven wear on the knives will result therefrom.

A one piece cast metal shell liner, the knives cast integral therewith, is without doubt the most substantial and most quickly installed of the various Jordan shell liners, but it has been found in practice that there is very frequently a slight difference in the taper on which the shells are bored and that to properly fit a new one piece lining into an old shell, it is necessary to take accurate measurements of the shell and to use great care in turning the lining so to insure a proper fit in the shell. The turning of each lining to fit a particular shell, and the care necessary to produce the exact taper required adds greatly to the cost of re-lining shells with one piece cast liners.

To overcome the necessity for such accurate work, which is expensive, and provide a one piece cast metal shell liner and locking means which will be interchangeable in a given size of Jordan, I have devised a one piece cast metal shell liner provided with a self centering shimming locking ring. This device, and the method in which it is installed in a shell is illustrated in the accompanying drawings, in which:

Fig. 1 is a longitudinal section through the shell and lining of a Jordan engine, the plug body and some of the plug knives being shown in place.

Fig. 2 is a section, on a larger scale, of a fragment of the shell of a Jordan engine equipped with my improved one piece cast shell liner and self centering locking ring.

Fig. 3 is a section, on a still greater scale, through a fragment of a Jordan shell, my improved shell liner and liner lock, and shows the self-centering shimming locking ring before being forced to a seat.

The same reference characters refer to the same parts throughout the several views.

Referring to the drawings, A represents the shell of a Jordan engine, B my improved one piece cast shell liner, C my self centering shimming locking ring, D the knife bars or ribs of the liner, E the plug body, F the plug shaft, G the plug knives, H the plug woods, K one of the usual attaching bolts which

may be used to assist in resisting torsional strains on the liner, and r^1, r^2, r^3, finish rings formed on the outside of the shell liner C.

In turning off the finish rings I preferably use a slightly less included angle than that which is standard for the bore of a Jordan shell, and the finish ring at the large end of the liner (r^1) I turn straight or parallel with the axis of the liner for a portion of its length.

The inside of my self centering shimming locking ring C, is also substantially parallel with the axis thereof, and the inside diameter is the same or but slightly in excess of the diameter of the straight portion of the finish ring r^1. The outside of the ring C is turned on substantially the same taper as is the liner.

To install my improved liner in the shell of a Jordan it is only necessary to insert the liner in the shell until the small-end finish ring r^3 comes to a seat against or in the shell, drive to a seat the self-centering shimming locking ring, and put in place any bolts which may be used to resist torsional strains. Any variation in the diameter of the shell will be compensated for by the ring C, for should the diameter of the shell be greater than standard, and where there is a difference it is usually an oversize, the ring C, will drive in until it reaches a point at which the inside diameter of the shell equals the standard and will fit it closely. When there is considerable oversize in the shell and the ring has to be driven in for more than the usual distance in order to reach a seat, the outer corner of the thin edge of the ring will first contact with the inside of the shell in advance of the point at which it will reach its proper seat, when this occurs the final driving of the ring will cause the thin edge thereof to be crimped over the ridge formed at the meeting of the straight and tapered portions of the largest finish ring.

It is of course obvious that such a locking ring as I make use of is self-centering and that driving such a ring in between the liner and the shell has the same effect as shimming out or increasing the diameter of the liner at the large end.

I preferably make use of the usual attaching bolts such as that shown at K.

I claim:—

1. In a Jordan engine, a conical liner the small end thereof adapted to seat against the engine shell the large end thereof wedged into and held concentric in said shell by a ring of wedge-shaped cross section driven between said shell and said liner.

2. In a Jordan engine, a one piece conical liner the large end thereof wedged into and held in concentric position by means of a ring of wedge-shaped cross section driven in between said liner and said shell.

In testimony whereof I have affixed my signature.

WALTER WERNER