

N. W. TAYLOR & J. W. BRIGHTMAN.

Improvement in Paper Rag Engines.

No. 120,837.

Patented Nov. 14, 1871.

Fig 1.

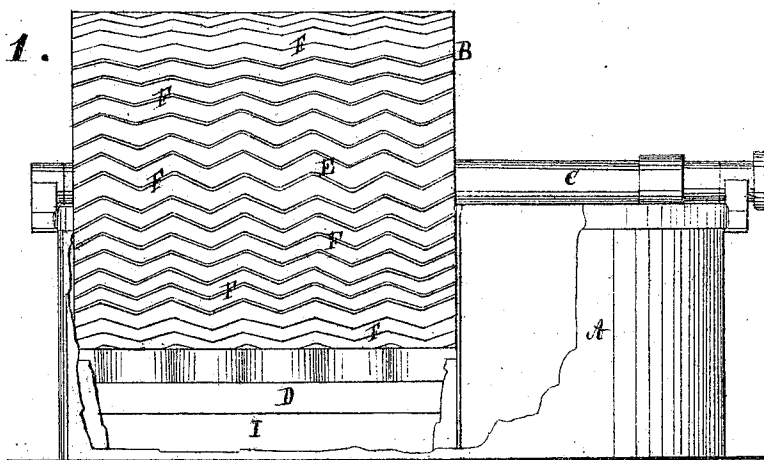


Fig 2.

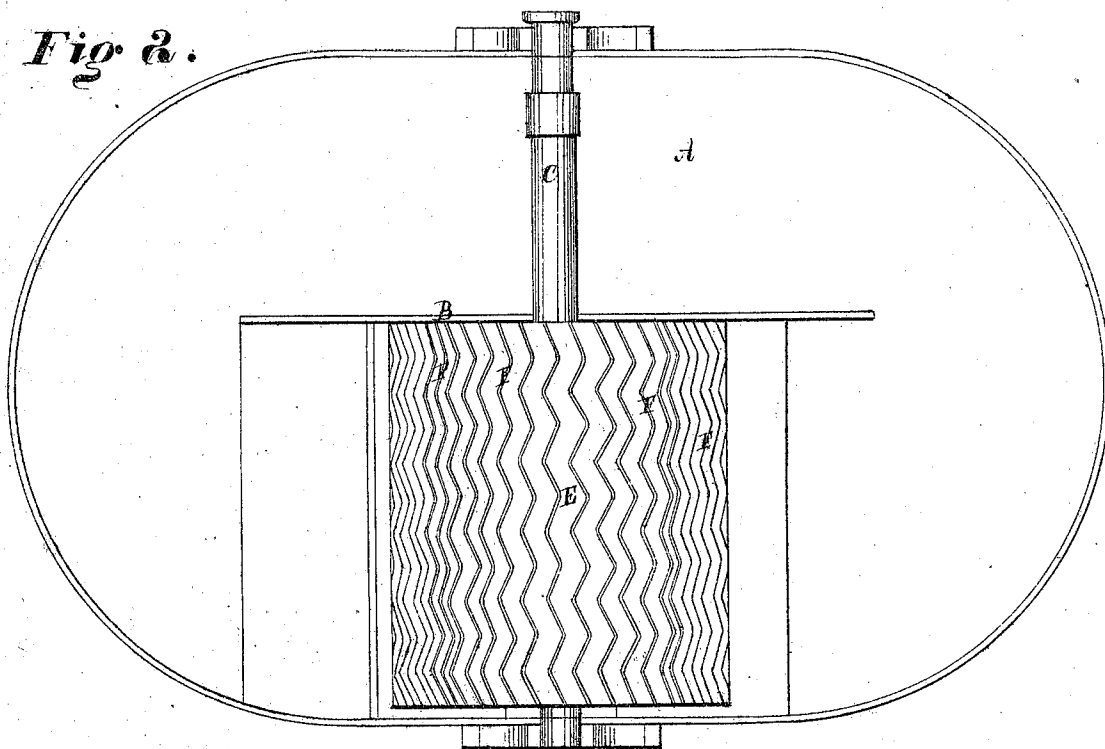


Fig 3.

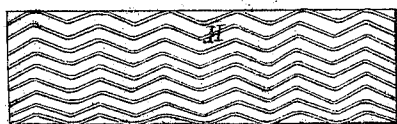
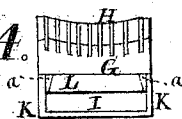


Fig 4.



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N. W. Taylor.
J. W. Brightman.
per Burrage & Co Attys

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Figs.

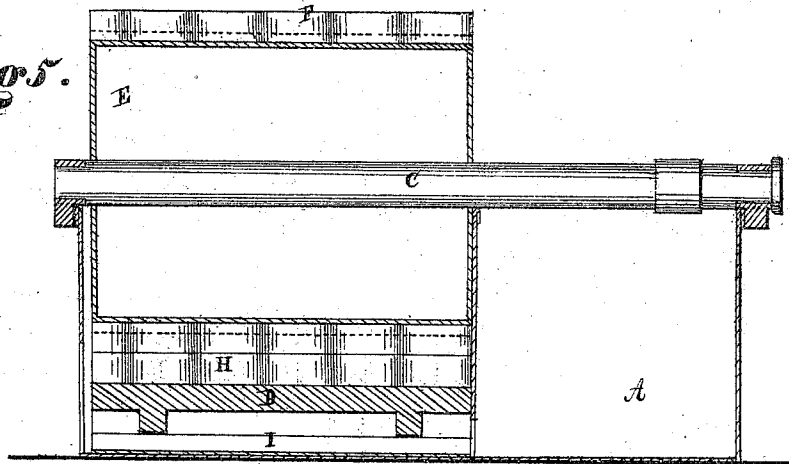
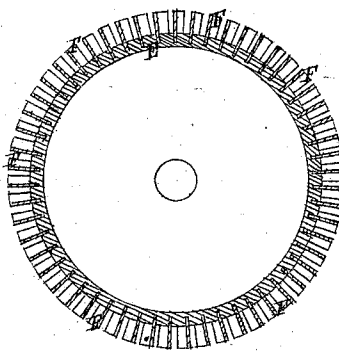


Fig 6.



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UNITED STATES PATENT OFFICE.

NEWTON W. TAYLOR AND JOSEPH W. BRIGHTMAN, OF CLEVELAND, OHIO.

IMPROVEMENT IN PAPER-RAG ENGINES.

Specification forming part of Letters Patent No. 120,837, dated November 14, 1871.

To all whom it may concern:

Be it known that we, NEWTON W. TAYLOR and JOSEPH W. BRIGHTMAN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and Improved Paper-Rag Engine; and we do hereby declare that the following is a full, clear, and complete description thereof, reference being had to the accompanying drawing making part of the same.

Figure 1 is a side elevation of the paper-rag engine. Fig. 2 is a plan view. Fig. 3 is a detached section. Fig. 4 is an end view of Fig. 3. Fig. 5 is a longitudinal section. Fig. 6 is a transverse section.

Like letters of reference denote like parts in the different views.

This invention has for its object the construction of the roller of a paper-rag engine. Said roller is made to consist of a cast-iron cylinder or shell in which the fly-bars are secured by casting the metal of the cylinder around them. It also has for its object the construction of the bed of the engine, and which consists of a cast-iron bed-plate, having therein secured the bars by casting the metal of said bed-plate around them. It furthermore has for its object a device whereby said bed is secured in place under the roller, and which, when worn out, can be removed to give place to a new one; all of which is hereinafter more fully described and set forth.

In the drawing, A represents the pulp-tub, in which the roller and bed of the engine are placed, and of which B is the roller mounted upon the shaft C, whereby it is driven; and D, the bed upon which the roller runs when cutting the pulp. Said roller consists of a hollow cast-iron cylinder or shell, E, Fig. 5, having in each of its two heads a hole for the admission of the shaft C. In the face of the shell and lengthwise therewith are secured the corrugated bars F. Said bars consist of thin plates of steel of a uniform thickness and width, and of a length equal to that of the shell, in the face of which they are secured by arranging them in the mold, in which the shell or cylinder is cast, and the melted metal allowed to run in between the bars. By this means the lower edge of each plate or bar is buried in the face of the roll or shell to a depth sufficient to secure them thereto in a strong and permanent manner, as shown in Fig. 6. The usual way of constructing rag-engine rolls is as follows: A pair of disks of the proper diameter for the heads of the roll are secured to a shaft. A third

disk is secured to the shaft between them as a central support to the bars. On the inside of the edge of each head or disk are cut radial grooves, in which are inserted the ends of the bars which are thereby held in a radial position. Said bars are prevented from falling from the grooves by the application of a band of iron shrunk on the periphery of the heads of the roll, and which bands are made to project inwardly so far as to embrace a part of the ends of the bars, a square notch being cut in the end of each bar for the admission of the band, thereby holding them in the grooves by a section of their lower edge below the notch. These bars are straight; hence, in order to give them sufficient strength to resist being torn from the heads and from being bent from a radial position, they are made thicker at the lower edge than at the upper—that is to say, each bar, when viewed endwise, is of the shape of a thin wedge; and to prevent them, as above said, from being bent from a radial position, the spaces between the series of bars are filled with wood. A roll thus constructed is seriously objectionable for the reason that in consequence of the bars being so thick at the lower edge the upper edge on wearing down becomes too thick for good service, and therefore they require to be thinned by planing down the side to a thin edge. This is a work of much labor and expense, and during the operation of thinning down the bars the engine lies idle. Another objection is that, for the reason of the bars of the roller being straight and the bars of the bed on which it rolls being made corrugated, the straight roller-bars wear irregularly, so that the work of the engine is not well and effectually done. These objections are avoided by the use of our roll, as the bars are of a uniform thickness; they become no thicker by wearing down, even to the face of the shell; hence, they require no refitting or thinning to keep them in good working condition. The bars, in consequence of being corrugated, require no filling between them to prevent them from becoming bent from a radial position, as the angles of the corrugations serve as braces for supporting the radial projections; also, in consequence of the corrugated shape of the bars they do not wear unevenly, in consequence of their contact with the corrugated bars of the bed on which they roll.

A further improvement, as aforesaid, consists in the construction of the bed of the engine, and which is as follows: In Fig. 4, G repre-

sents the bed-plate, in which the bars H are secured. Said bed-plate is of cast-iron, having secured therein the bars, which are corrugated thin plates of steel of a uniform thickness and width, and of a length to correspond with the length of the cylinder or roller B. The bars are secured in the bed-plate during the time of casting said plate, the bars being arranged in order in the mold for the bed-plate, and the melted metal therefor allowed to run between them. In this way the lower edge of the bars are embedded in the metal of the plate sufficiently deep to hold them in a vertical position, as shown in Fig. 4. The angular shape of the bars prevent them from being bent from a vertical line; hence no filling is required between them in order to support them in a vertical position.

Bed-plates are usually constructed as follows: A number of plates or bars of the proper width and length are placed side by side and then secured to each other by means of bolts passing through them. These bars form the bed of the engine, or that part thereof immediately under the roller. A bed thus made is objectionable for the reason that when all of that part of the bars above the bolts is worn away that part in and about the bolts, and below them, and which constitutes a large portion of the bars, is thrown away; hence such beds become expensive, for an entire new bed must replace the old one, which requires much time and labor to remove the one and properly fit in the other. To avoid this trouble and expense we make our engine-bed as above described, which, as will be observed, requires no bolts to bind them together; and inasmuch as but a small portion of the edge of the bars are buried in the cast-iron bed-plate therefore but a little part of the bars is lost when they are worn down to the face of the plate, and which is then quickly and easily removed for the replacing of it by a new one. The bed is secured under the roller by means of a shoe, I, Fig. 1, an end view of which is shown in Fig. 4. Said shoe consists of a bottom plate, having two up-turned sides, K, with an open top and ends. Along the inner edge of each of the sides is a cleat or rib, *a*, of a triangular shape when viewed endwise, as shown in Fig. 4. Transversely on each end of the under side of the bed is cast a dovetailed rib,

L, which is made to fit correspondingly the cleats *a* of the shoe, into which the bed is slid, as shown in Fig. 4, in which it will be seen that the under side of the bed rests upon the edges of the sides K, and which is secured from being lifted upward by the transverse ribs L and the ribs *a*, which have a dovetailed relation to each other, as shown in said Fig. 4.

By securing the bed under the roll in this way it can be easily removed when the bed shall have become worn out and a new one replaced, thereby saving much time, labor, and expense in replacing the machine.

We do not confine ourselves to the use of corrugated bars as herein shown, as we contemplate using straight ones, as bars of different angles or forms from those herein specified, but secured to the cylinder or shell in the same way as the bars hereinbefore described. The bars in the bed-plate may be arranged with their angle reversely to each other, either singly or in a series of reverse relations.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The herein-described paper-rag-engine roller, consisting of the cast-iron cylinder or shell E, having bars F secured thereto by arranging said bars in the mold in which said cylinder is cast, and the metal thereof allowed to run between the bars, whereby their edge becomes embedded in the face of the cylinder, substantially as and for the purpose set forth.

2. The herein-described bed for a paper-rag engine, consisting of the cast-iron bed-plate or piece G, having corrugated bars H of a uniform thickness secured thereto by arranging said bars in the mold in which said bed-plate is cast and the metal allowed to run between the bars, whereby their edge becomes embedded in the bed-plate, substantially as and for the purpose specified.

3. The shoe I, constructed with sides K and cleats *a*, in combination with the bed-plate G, substantially in the manner as and for the purpose set forth.

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