H. PARKER.

PRESS ROLL.

APPLICATION FILED JUNE 17, 1909.

969,652. Patented Sept. 6, 1910.

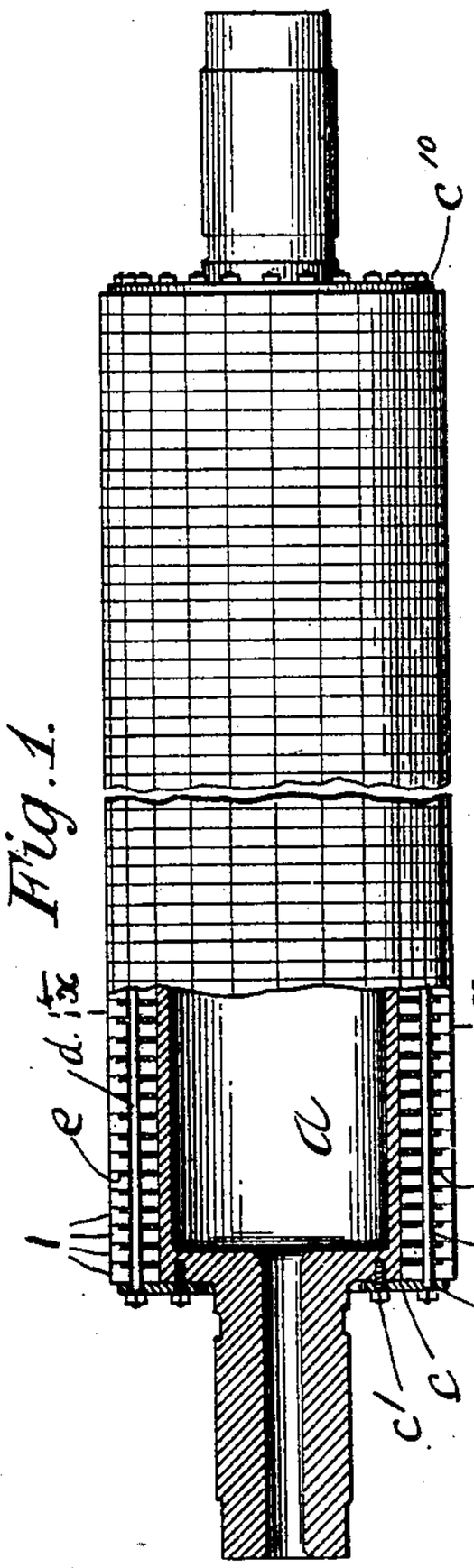

Fig. 1.

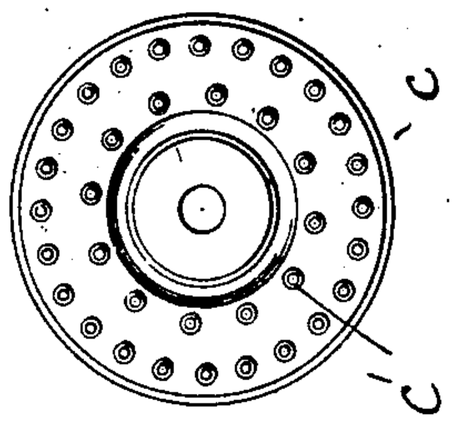

Fig. 2.

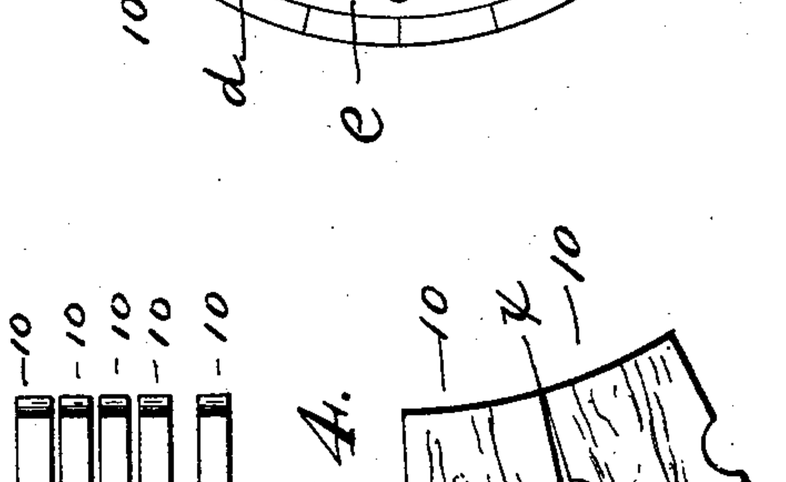

Fig. 6.

Fig. 5.

Fig. 4.

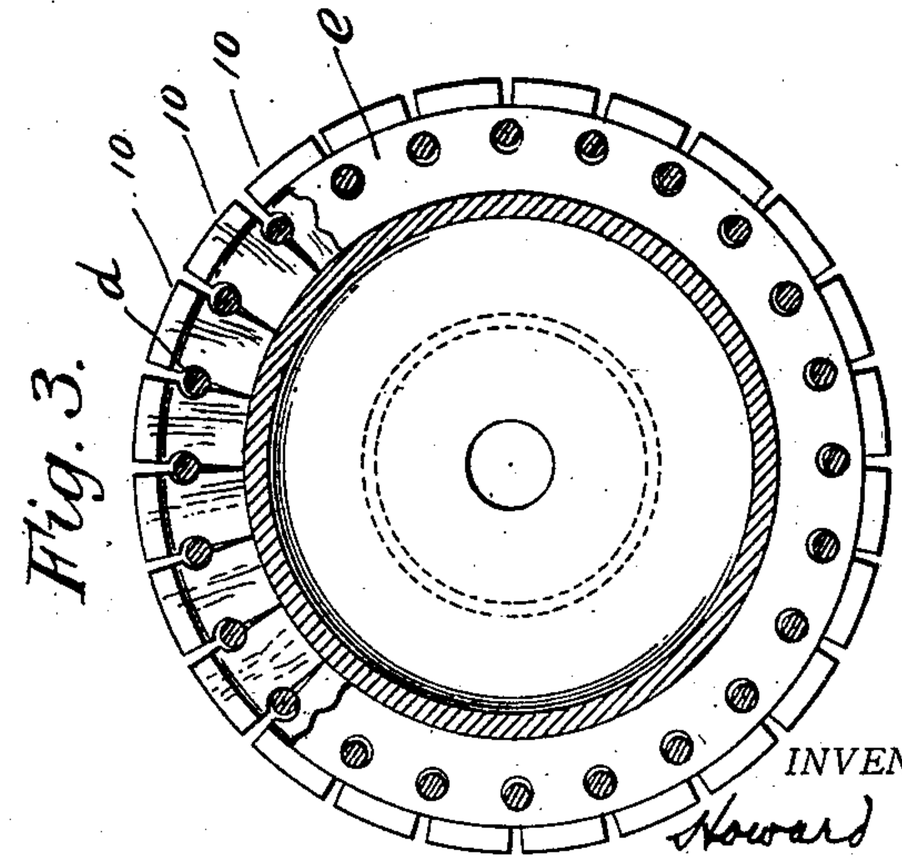

Fig. 3.

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PRESS-ROLL.

969,652. Specification of Letters Patent. **Patented Sept. 6, 1910.**

Application filed June 17, 1909. Serial No. 502,731.

To all whom it may concern:

Be it known that I, HOWARD PARKER, a citizen of the United States, and a resident of Nashua, in the county of Hillsboro and State of New Hampshire, have invented certain new and useful Improvements in Press-Rolls, of which the following is a specification.

My invention relates to improvements in the construction of press rolls.

The object of the invention is to produce a built-up roll having a wooden or like surface which will take the place of the solid wooden rolls which are now sometimes used; to produce a roll which is simple in its construction and at the same time so made as to absolutely maintain its perfect round condition during use; a roll which can be easily repaired, and whose life will be much greater than the life of the ordinary solid wooden roll.

In the drawings Figure 1 is a central longitudinal section of a roll made in accordance with my invention. Fig. 2 is an end view of the roll. Fig. 3 is a cross sectional view on the line *x*—*x* of Fig. 1, showing roll before blocks are expanded. Fig. 4 is a detail view of two of the blocks of which the surface of the roll is made up, showing the manner in which they are fitted together and the roll built up. Fig. 5 is a detail view of blocks of several sections side by side as arranged on the core and showing the different ways in which the sides of the sections may be recessed to receive the binding rings. Fig. 6 is a view similar to Fig. 3 but showing the complete roll.

In the embodiment of the invention illustrated in the drawings the surface of the roll is formed by a series of small wooden blocks seated on the core and securely held in place by binding devices which are secured to the core in some practical and satisfactory manner.

Referring to the drawings *a* denotes the core of the roll. As shown it is made hollow but it may take any form desired, the only requirement being that it shall be stiff enough to prevent any sagging in the surface of the roll; it is provided with trunnions.

In building up the roll one of the end rings *c* is fastened to the end of the core by the screws *c'*. This end ring has a series of holes c^2 arranged circumferentially about it, there being twenty-four in the end ring shown in the drawings. Through these holes are passed stiff binding-rods *d* which extend lengthwise of the roll.

The surface of the roll is built up of a series of annular sections 1, each section comprising a number of small blocks 10, preferably of wood, arranged end to end, as clearly illustrated in Fig. 3. As clearly seen in Figs. 3 and 4 the abutting ends of the blocks of each section are cut away to form a hole through which the binding-rods *d* extend. At intervals throughout the length of the roll a binding-ring *e* is slipped onto the core, this binding-ring having apertures through which the binding-rods *d* pass. As shown in Fig. 1 of the drawings, one of these binding-rings is located between each pair of the circular sections, the blocks of one or both sections being preferably recessed to receive the ring, as shown in Fig. 5. When the surface of the roll has been completed the other end ring c^{10} is put in place, secured to the end of the roll, and the binding-rods are drawn up by the nuts to clamp the annular sections firmly together. When these rolls are to be used dry the blocks of each annular section are fitted together with their ends abutting. When they are used as wet rolls, as is often or usually the case in paper and pulp machinery, I leave spaces between the ends of the blocks of each section and after the roll is built up submerge it for a sufficient length of time so as to cause the wooden blocks to swell, closing up the spaces and producing a roll having a smooth unbroken surface.

Referring particularly to Figs. 3 and 4 it will be seen that as the roll is first built up each block in each annular section is spaced slightly from its adjacent blocks, although preferably the inner corners of the blocks are arranged so that they will just contact, as indicated at *x*, while the outer corners have a substantial clearance. For instance, in the roll illustrated it is intended that a space of about 3/16 of an inch shall be left between the outer corners of each of the blocks in each annular section. It will further be seen that while the holes through the rings and the annular sections are in alinement, when considered longitudinally, in order that the binding-rods may pass directly through the rings and sections from end to end of the roll, that they are out of alinement when considered radially and that the binding-rods are seated in the an-

nular sections and held down on their seats by the rings.

When the roll has been completely built up it is immersed in water to allow the wooden blocks of which its surface is made up to swell, which results in closing the spaces between the blocks of each circular section. The tendency of these blocks during the swelling action would be to move out away from the core, but this tendency is counteracted by reason of the fact that the wooden blocks are bound down onto the core by the binding-rods, which in turn are held in position by the binding-rings with the result that the swelling of the blocks binds them even more securely onto the core. After the roll has swelled to its limit it presents the appearance shown in Fig. 2 of the drawings, the spaces between the blocks of each annular section being entirely closed, and the surface of the roll may now be turned down and smoothed up ready for use. During the swelling action of the wooden blocks, and due to the fact that the inner corners of the blocks of each annular section are originally just in contact with one another, the blocks have a wedging action, and inasmuch as the binding-rods cannot buckle or move outwardly because they are held in place by the binding-rings, this wedging action operates to clamp the blocks firmly and securely onto the core of the roll.

It is not necessary that there be a binding-ring between each pair of annular sections, it being sufficient if there are enough of these binding-rings throughout the length of the roll to prevent the binding-rods from buckling outward under the swelling strain of the wooden blocks.

I am aware that the structure herein described can be modified or altered in some particulars without departing from the spirit of the invention and I desire to include herein and in the annexed claims any and all such modifications.

I claim:—

1. A roll comprising a core and a covering therefor, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a plurality of blocks of expansible material arranged end to end and originally spaced from one another but adapted to be expanded to bring said blocks into contact and place them under compression, seats formed in the opposing ends of said blocks, binding members resting on said seats, and means for securing said binding members to said core at intervals throughout their length.

2. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a plurality of members arranged end to end but independent of each other, and binding members seated in the abutting ends of said members and means for securing said binding members to said core.

3. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a number of blocks arranged end to end but independent of each other, seats formed in the abutting ends of all of said blocks beneath their surface, binding members resting on said seats, and means for connecting said binding members to said core.

4. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a plurality of blocks of expansible material arranged end to end and spaced from one another, seats formed in the opposing ends of said blocks, binding members resting on said seats, means for connecting said binding members to said core, said blocks being expanded to close the spaces between them.

5. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a number of blocks of expansible material arranged end to end, the inner corners of said blocks being arranged in contact with one another and the outer corners thereof spaced slightly from one another, seats formed in the opposing ends of said blocks, binding members resting on said seats, means for connecting said binding members to said core, said blocks being expanded to close the spaces between them.

6. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a number of blocks abutting end to end but independent of each other, seats formed in part in the abutting ends of each pair of blocks, binding members resting on said seats and engaging the ends of all of said blocks, and means for connecting said binding members to said core.

7. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a number of wooden blocks abutting end to end and recessed in their abutting faces to form a series of apertures through said sections, binding-rings seated on said core between one or more pairs of said annular sections, aper-

tures through said binding-rings out of radial alinement with the apertures through said sections, and binding-rods passing through the apertures in said binding-rings and said sections, substantially as described and for the purposes set forth.

8. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of two or more wooden blocks arranged end to end with their opposing faces recessed to form a seat partly in each block, the inner corners of said blocks being in contact and the outer corners thereof being spaced slightly from one another, binding-rings seated on said core and located between two or more pairs of said sections, said binding-rings having apertures formed through them, and binding-rods passing through the apertures in said binding-rings and resting on the seats formed between the ends of said blocks, said blocks being expanded to close the seats between them.

9. A roll comprising a core and a covering secured thereto, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a plurality of wooden blocks arranged end to end, binding-rings seated on said core and arranged between said annular sections, binding-rods passing through said binding-rings and said sections between abutting ends of the blocks of each section, and end rings secured to said core and supporting the ends of said binding-rods.

10. A roll comprising a core and a covering therefor, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a plurality of blocks arranged end to end but independent of each other, and recesses formed partly in the abutting ends of each block, tie-rods extending lengthwise of said roll in said recesses, and means arranged at intervals along said rods for binding them to said core.

11. A roll comprising a core and a covering therefor, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of members arranged end to end, binding rings arranged between two or more of said sections, tie-rods extending lengthwise of said roll engaging said members on their inner sides and engaged by said binding rings on their outer sides.

12. A roll comprising a core and a covering therefor, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, one or more of said sections having recesses in the side walls beneath the surface, binding rings located in said recesses, and tie-rods extending lengthwise of said roll through said sections.

13. A roll comprising a core and a covering therefor, said covering being made up of a series of annular sections fitted onto said core and arranged side by side, each section being made up of a plurality of blocks arranged end to end, the sides of said sections being recessed, binding rings located in said recesses, tie-rods extending lengthwise of said roll through said sections and between the abutting ends of said blocks.

HOWARD PARKER.

Witnesses:
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