No. 613,218. Patented Oct. 25, 1898.

A. S. ALLEN.

TYMPAN FOR PRINTING.

(Application filed Mar. 26, 1898.)

(No Model.)

Fig. 1

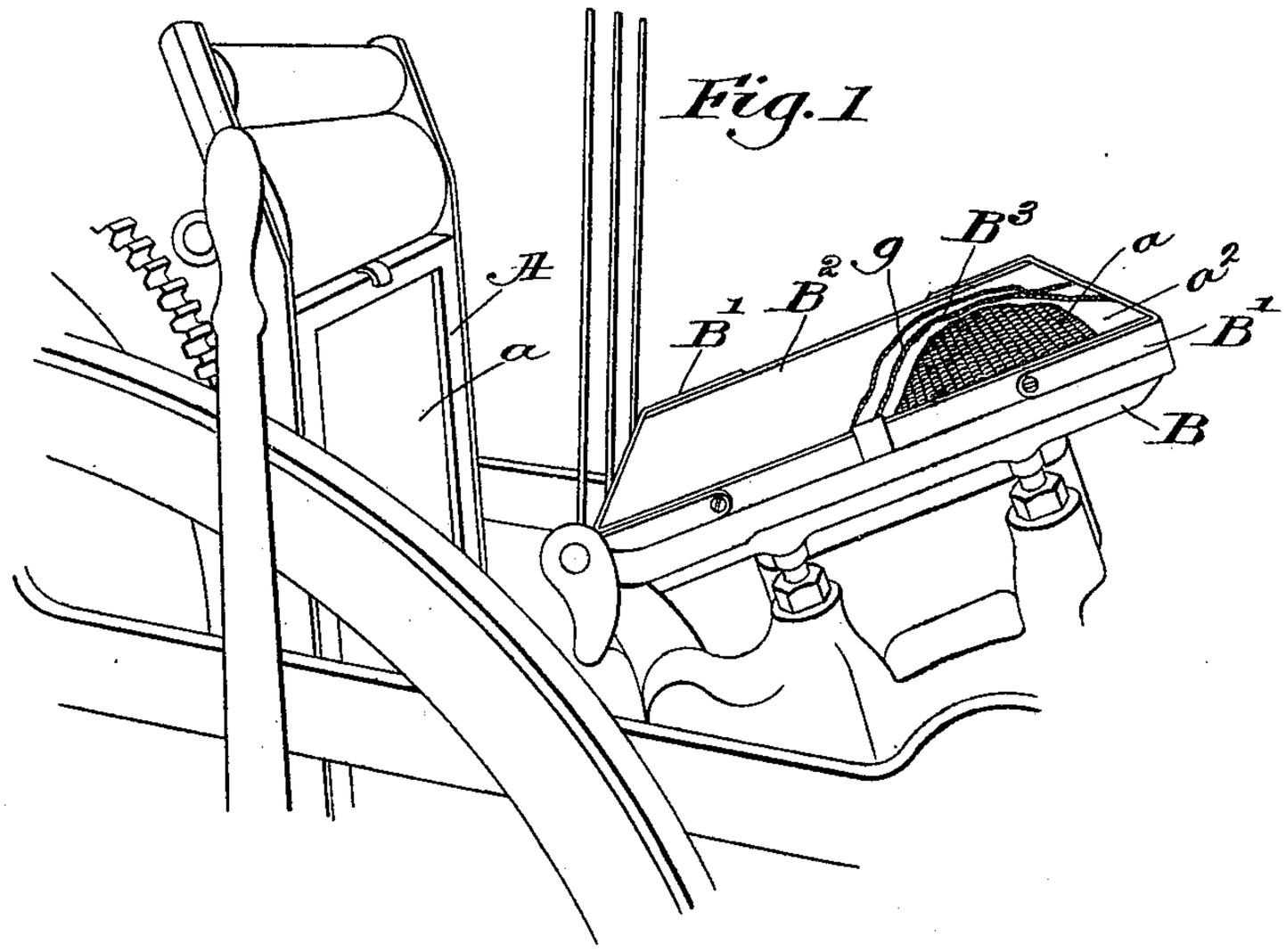


Fig. 2

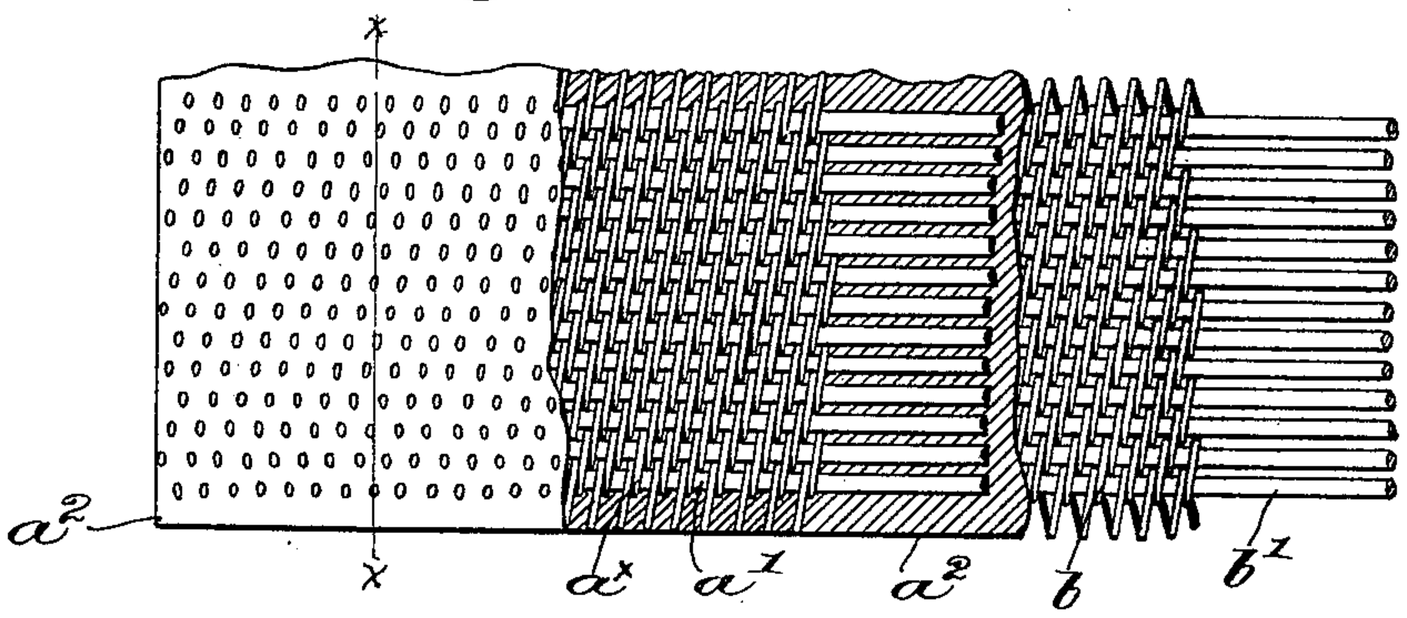


Fig. 3.

Fig. 7

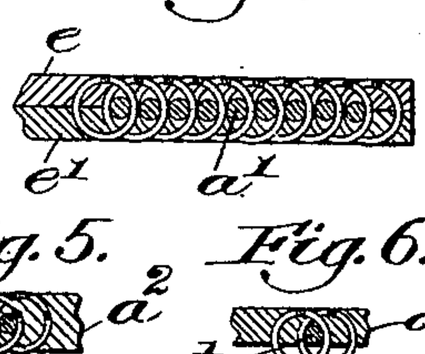


Fig. 4

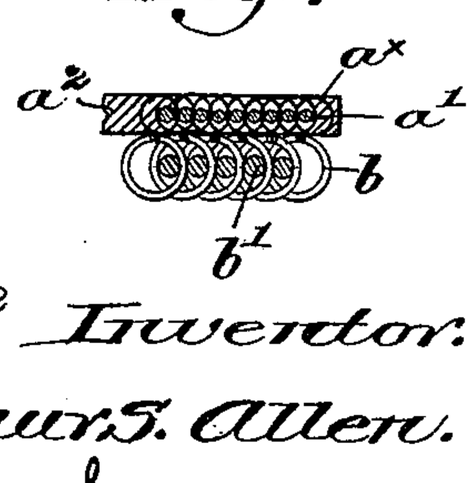


Fig. 5.

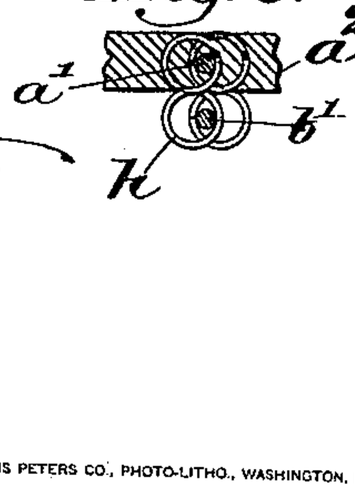
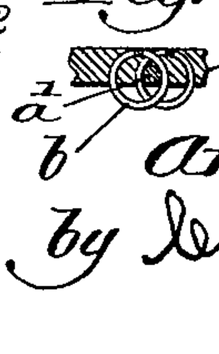


Fig. 6.



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UNITED STATES PATENT OFFICE.

ARTHUR S. ALLEN, OF BOSTON, MASSACHUSETTS.

TYMPAN FOR PRINTING.

SPECIFICATION forming part of Letters Patent No. 613,218, dated October 25, 1898.

Application filed March 26, 1898. Serial No. 675,258. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR S. ALLEN, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Tympans for Printing-Presses, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In the process of printing it is necessary, to secure uniformity in the printed surface, that the printing-surface at the bed of the press and its opposed tympan should be substantially parallel at the printing-point from edge to edge, and to insure this parallelism and gain uniformity the printer has frequently to build up with paper or otherwise the parts of the tympan or to raise parts of the type or other printing-surface at the bed to the desired level. The putting of the printing-surface, of whatever form, and the tympan-surface in this parallelism is called "making ready," and very considerable time is consumed in this preparatory step.

The object of this invention is to do away with making ready.

In an application, Serial No. 669,041, filed by me February 4, 1898, I have shown an auxiliary bed, it constituting a tympan-surface, said bed being composed, essentially, of a series of preferably-interlocked spring-coils, the coils in practice having applied to them a suitable covering to thus make a smooth face next the printing-surface. In my experiments with this bed I have further improved it by making it more sensitive, especially for fine and delicate printing, and at the same time the surface of the bed is made firmer, thus enabling it to resist heavy pressure. In accordance with my present improvement I apply to and interpose between the plurality of wires, or the wires of the spring-coils constituting said bed, a bracing composed of a yielding substance—such, for instance, as an india-rubber compound or any other usual or equivalent yielding substance—which will brace and keep up in normal position the plurality of wires or the twists of the adjacent spring-coils. When india-rubber is used as the bracing, I may fill the interstices between the plurality of wires or the spring-coils of the auxiliary bed with a compound of india-rubber or equivalent material, either extended or not with cork or other usual matter, and thereafter by pressure and heat said compound may be cured in suitable or usual manner, leaving it more or less elastic, according to the firmness desired for the surface of the tympan. This bracing material or compound may be in the form of a sheet or sheets of india-rubber, it being incorporated by pressure with the wire or spring coils, the pressure causing the bracing compound to enter between the wire or turns of the spring-coils and brace the same. I may apply one of these sheets of bracing compound to one or both sides of said auxiliary bed.

Preferably with an auxiliary bed composed of spring-coils I may at times employ in the meshes of the said coils substantially straight mesh-wires, said wires obviating any sidewise creeping or moving of the coils, and these mesh-wires may, if desired, be left in the bed while the bracing is being incorporated therewith, and in some instances, if desired, said mesh-wires may, after the bracing has been vulcanized or cured, be withdrawn, which would leave a series of air-cells. So, also, I find it in some instances of great advantage to produce an auxiliary bed having a plurality of layers or plies, each ply composed of a plurality of wires or spring-coils, one lying upon the other, and in such bed the undermost ply may be stiffer—*i. e.*, the wires entering into it may be of larger diameter than the ply at the face of the bed—and in practice by the use of wires of small diameter and correspondingly finer coils braced internally, as I have provided for, it is possible to make an auxiliary bed with an exceedingly sensitive surface.

Figure 1, in perspective, shows a sufficient portion of one form of well-known printing-press with my improved tympan applied thereto to enable the same to be understood, the face of the tympan being partially broken out to show the interior wire or spring coils, the said figure also showing a covering for said face which may be employed, if desired, said covering being broken out. Fig. 2 is a detail showing in plan view a portion of my improved tympan, the same being broken out in different places to show its construction from top to bottom. Fig. 3 is a section in the

line x, Fig. 2. Fig. 4 is a section of a modified form of tympan wherein the wires are of different diameters and the spring-coils are of different sizes. Figs. 5 and 6 show modifications of tympan. Fig. 7 shows a modified form of applying the bracing composed of a yielding substance.

To illustrate my invention, I will but briefly describe the press to which it is shown as applied, and, referring to the drawings, let A represent the bed, and a the printing-surface or form, of any well-known, desired, or suitable character, it containing the matter to be transferred to a sheet by printing, and B represents the platen, it, in the form in which I have chosen herein to illustrate my invention, receiving and carrying my improved tympan. The platen is embraced at its upper and lower ends by suitable clamps B′, which serve the purpose of holding in place the usual strong sheets of paper, as B^2 B^3, of any suitable kind or weight, or it may be cloth or any other usual material commonly employed in printing to constitute a face for a tympan.

The tympan in Figs. 2 and 3 is shown composed of two layers or plies, each ply presenting wire or spring coils laid side by side, one spring-coil being marked $a^\times$ and the other b, the one b constituting the base of the tympan. These spring-coils may contain a series of mesh-wires a' b'. The spring-coils $a^\times$ contained in the upper layer or ply of the tympan are braced internally by the application between the wire or the turns of the spring-coils of a yielding substance a^2. This yielding substance may and preferably will be of india-rubber or other yielding substance, and said material may, if desired, be extended by mixing with it ground cork or other usual or suitable material. This bracing composed of a yielding substance, as intimated, may be made by applying a suitable compound containing india-rubber or equivalent material directly into the interstices between the wire or spring coils, and thereafter by pressure and heat the compound may be cured, leaving it more or less elastic, according to the firmness desired at the face of the tympan. The yielding substance employed for bracing the wires or spring-coils may be applied in sheet form to one or both sides of the spring-coils, as in Fig. 7, it being embedded in said wire or spring coils by pressure, thus bracing up the spring-coils in every direction. Fig. 7 represents two sheets of bracing compound.

Usually only the uppermost series of wires $a^\times$ need to be braced by the yielding substance; but my invention includes bracing either or both sets.

The wire in the top surface of the bed, made in two plies, may, as shown in Fig. 4, be of less diameter, and the coils may be of less diameter than the coils of the lower ply.

I may, if desired, employ a bed containing but one series of wire coils, as shown in Figs. 6 and 7, and these coils may be made of wire of any diameter, and the coils may be of any diameter, and the spring-coils may be of any usual or suitable shape.

In Fig. 6 I have shown the series of spring-coils, the bracing, composed of the yielding substance, extending from one surface of the spring-coil toward but not to the opposite surface.

Fig. 5 shows a spring-coil h made double or of 8 shape, and only one-half of the 8-shaped spring-coil has applied to it the bracing; but this bracing may extend throughout.

The mesh-wires a' b' may remain in the bed; but should it be considered desirable for any reason one or both sets of said mesh-wires may be withdrawn, and if this is done after the interposition of the bracing referred to there will be left a series of tubular cells or pockets.

If desired, sheets of paper or cloth, as B^2 and B^3, may be added as a covering to the tympan; but the bracing itself forms a practical face to be opposed to the type.

Fig. 2 shows portions of the spring-coils exposed at the surface of the bracing.

It will be obvious that the tympan-surface herein provided may be applied to any form of cylinder-press, as the surface opposed to the type or equivalent.

The turnings of the wire at the surface of the tympan constitute areas presenting independent supports which may yield to pressure of the printing-surface, the bracing applied in the spaces between said supports aiding in modifying and limiting the extent to which the supports may yield under pressure. Believing myself to be the first to use wire or spring coils in a tympan and to fill the interstices or spaces between the turnings of the coils with a bracing material substantially such as described to brace up and keep the said wire or spring coils from creeping or slipping one with relation to the other to thus constitute an effective tympan in connection with printing-presses, this invention is not limited to the exact shape or condition shown of the wire or spring coil.

In Figs. 3, 4, and 7 I have, for the sake of clear illustration, shown the bracing as extended from one side of the layers of spring-coils; but the completed auxiliary bed will not show the bracing as extended to the degree illustrated.

The construction shown in Figs. 3, 4, and 5 is not herein claimed specifically, as the same forms the subject-matter of another application, Serial No. 691,569, filed September 22, 1898.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A tympan for use in printing, it consisting of wire braced between the interstices thereof with a yielding substance incorporated therewith, substantially as described.

2. A tympan for use in printing, it consisting of yielding wire internally braced by

a yielding substance exposed at both faces, substantially as described.

3. A tympan for use in printing composed of a series of interlocked spring-coils internally braced by a yielding substance, substantially as described.

4. A tympan for use in printing, it consisting of a series of interlocked spring-coils internally braced by a yielding substance interposed between the several twists of the spring-coils, substantially as described.

5. A tympan for printing-presses, it being composed of a series of spring-coils suitably interlocked, and mesh-wires inserted through said spring-coils, and a bracing applied between the twists of said spring-coils, said bracing being composed of a yielding substance, substantially as described.

6. The combination with a platen or tympan carrying surface, of a tympan consisting of wire adapted to yield, said wire being braced between its interstices by a yielding substance incorporated therewith, substantially as described.

7. A tympan for use in printing, comprising spring-coils lying side by side and internally braced by a yielding substance, substantially as described.

8. A tympan for use in printing, comprising spring-coils lying side by side with the individual turns of one coil overlapping the turns of the adjacent coil, and a yielding bracing for and in which said coils are embedded, substantially as described.

9. A tympan for use in printing, comprising spring-coils lying side by side, the turns of the coils in use receiving and resisting pressure transversely to their length, and internally braced by a yielding substance, substantially as described.

10. A tympan for use in printing, comprising a plurality of adjacent spring-coils internally braced by a yielding substance, substantially as described.

11. A tympan-surface for printing composed of a bed presenting areas of independent supports, and a yielding or elastic bracing applied to said bed and filling fully the spaces between said supports, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR S. ALLEN.

Witnesses:
GEO. W. GREGORY,
EMMA J. BENNETT.