

No. 613,220.

Patented Oct. 25, 1898.

A. S. ALLEN.  
PRINTING PRESS.

(Application filed Sept. 22, 1898.)

(No Model.)

Fig. 1.

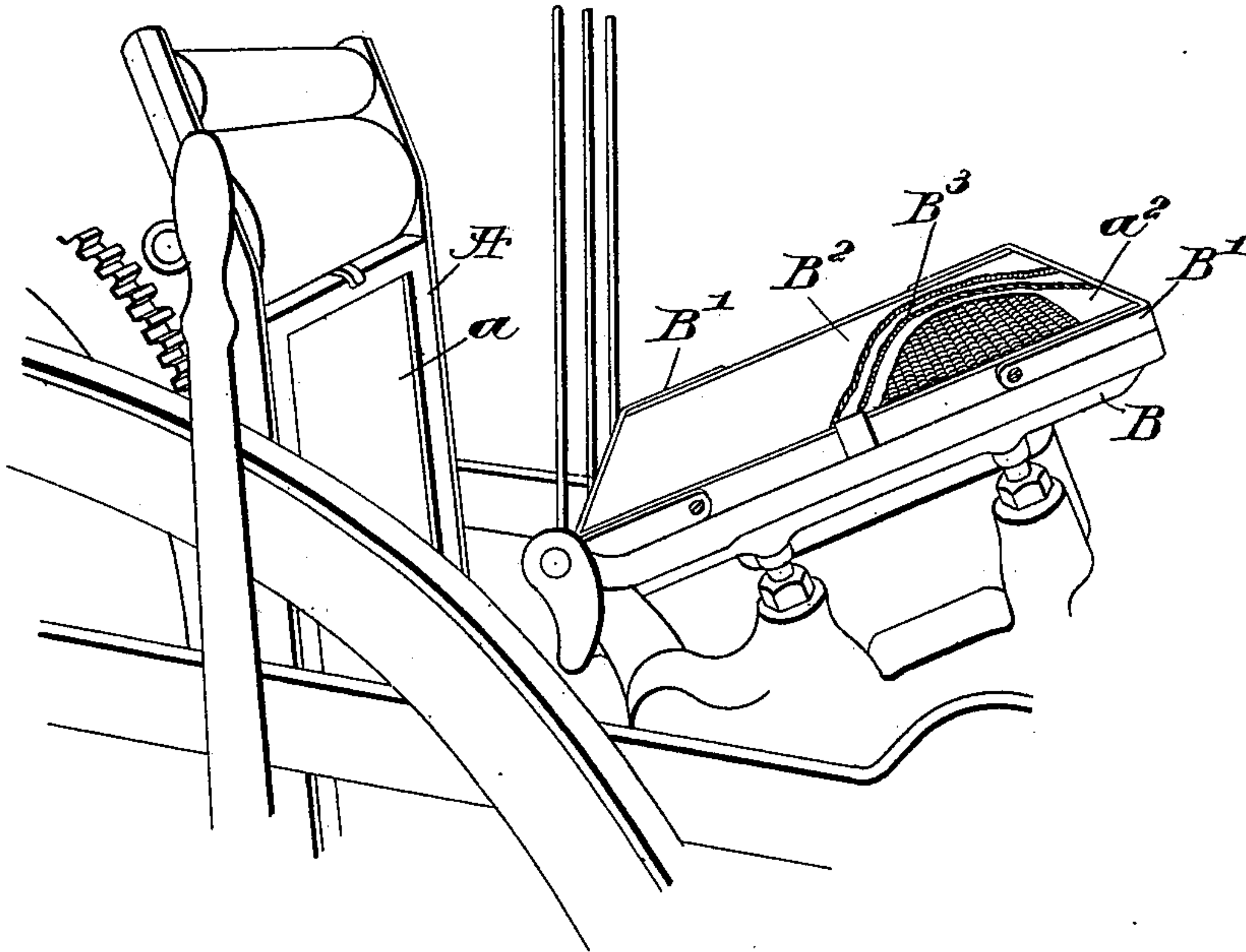


Fig. 2.

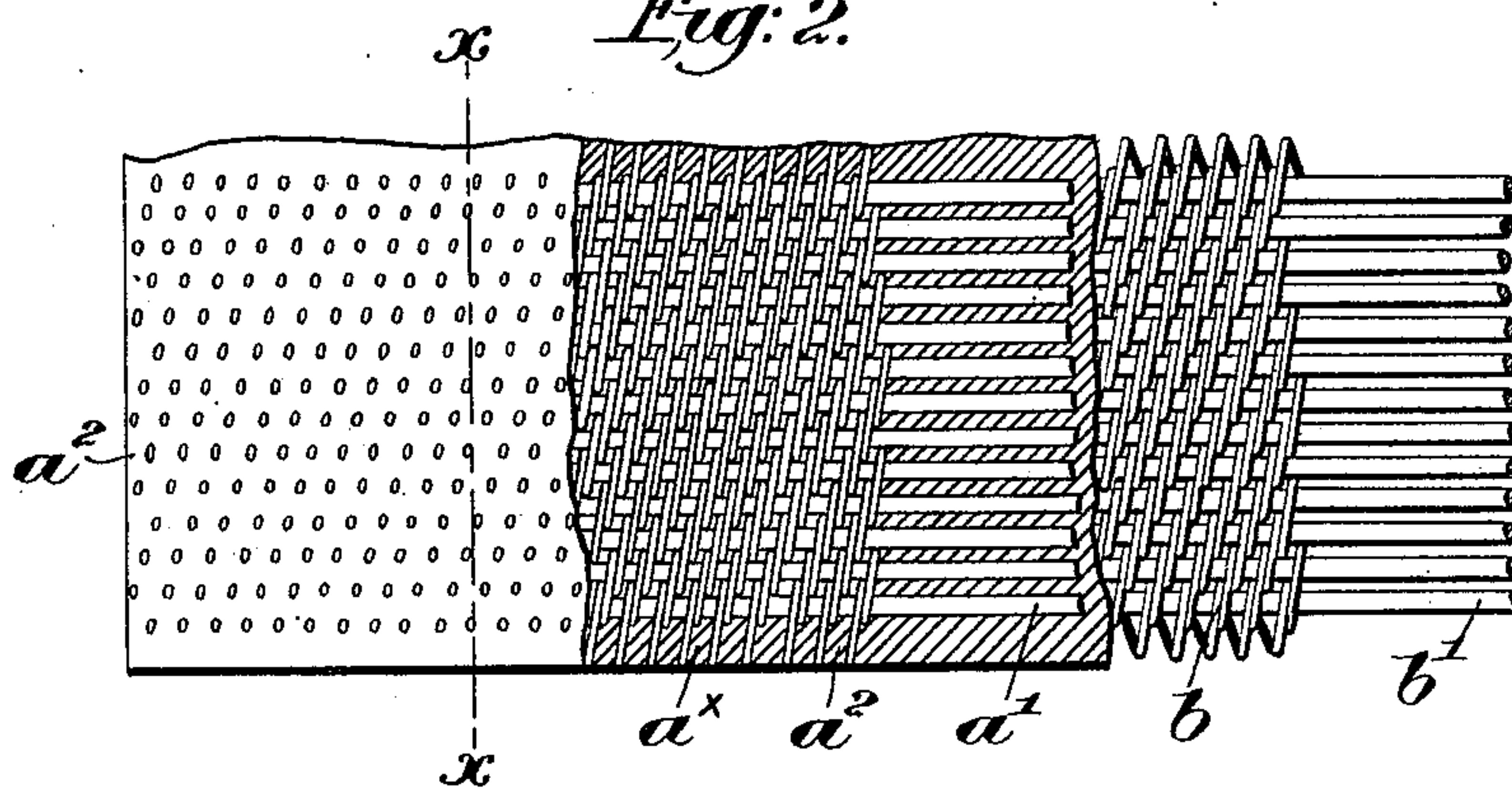
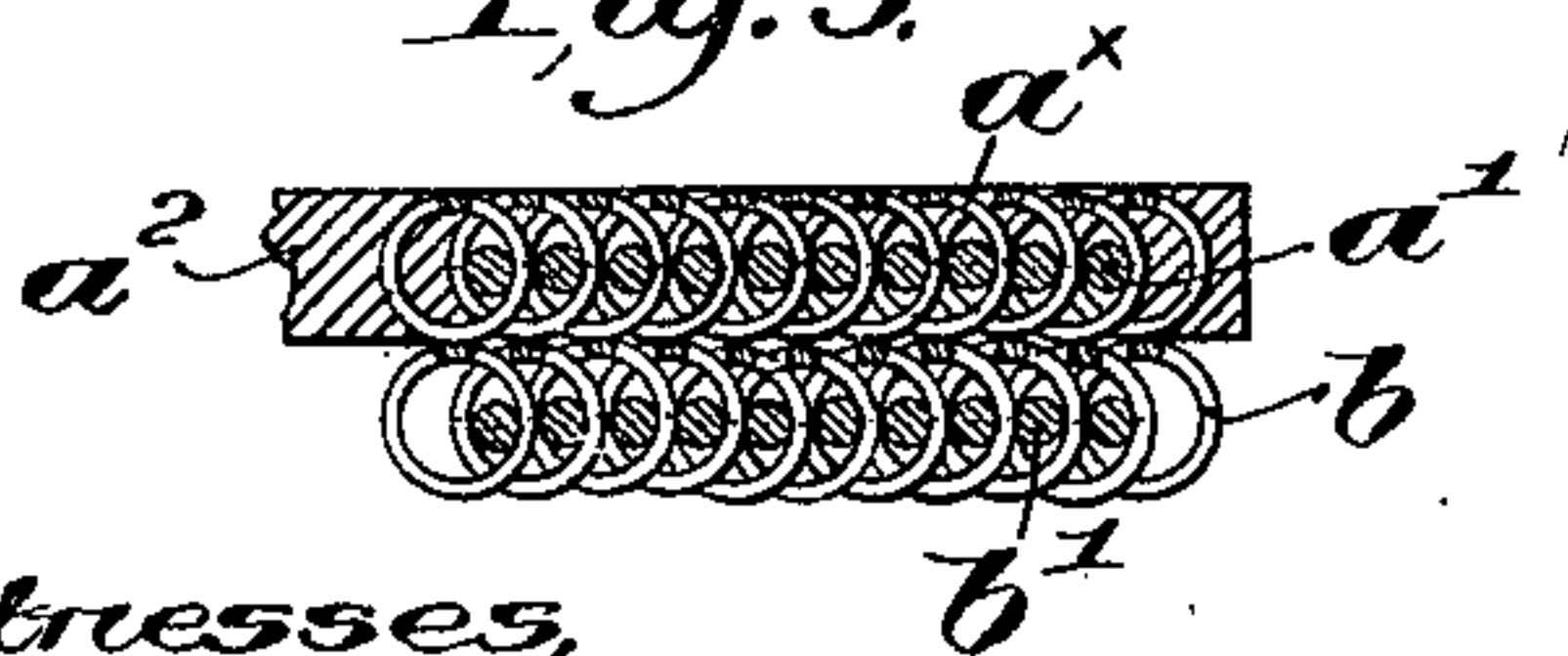
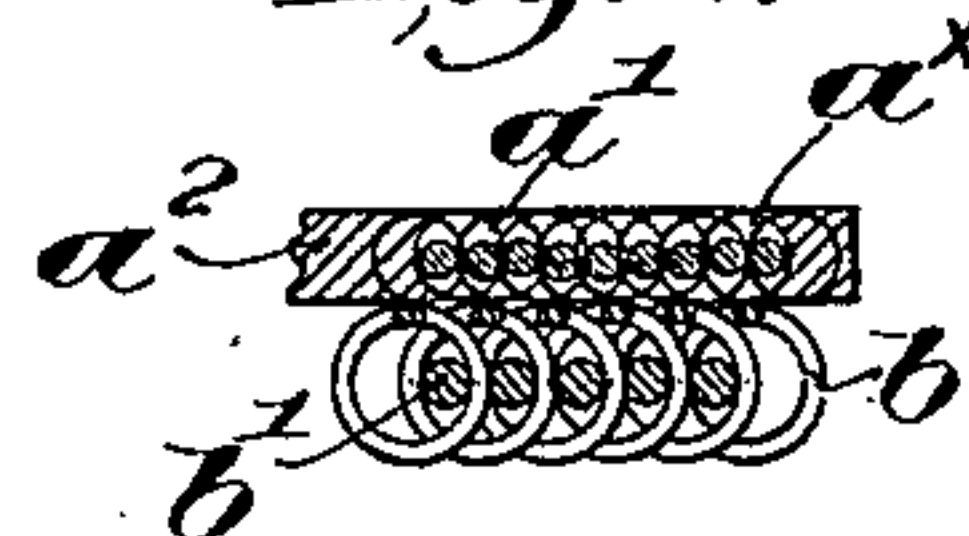


Fig. 3.



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Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 613,220, dated October 25, 1898.

Application filed September 22, 1898. Serial No. 691,569. (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 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 other substance the parts of the tympan in order that it may be parallel with the printing-surface, which may be a type or plate of any usual or known kind. 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 another application, Serial No. 669,041, filed 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 externally a suitable covering to thus make a smooth face next the printing-surface. In my experiments with this bed I have further improved it and have made it more sensitive, especially for fine and delicate printing, and at the same time I have made the surface of the bed firmer, thus enabling it to resist heavy pressure. The wires or spring-coils entering into said bed are herein shown as having applied to them 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 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 the 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 or bed. This 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. These sheets may be applied to one or both sides of the auxiliary bed.

I find it in some instances of great advantage to make the auxiliary bed to present a plurality of layers or plies, each ply being composed of a plurality of wires or spring-coils, one ply 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 wires entering into the ply at the face of the bed—and in practice by the use of wires of smaller diameter and correspondingly finer coils braced internally, as herein provided for, it is possible to make an auxiliary bed with an exceedingly sensitive surface.

Preferably the spring-coils may have applied to them mesh-wires, said wires extending through the coils in the direction of their length and tending to obviate any sidewise creeping or moving of the coils, and these mesh-wires will be preferably applied to the bed before the bracing is incorporated with the wires; but, if desired, said mesh-wires may, after the bracing has been vulcanized or cured, be withdrawn, which would leave a series of air-cells.

Figure 1, in perspective, shows a sufficient portion of one form of well-known printing-press with my improved tympan applied thereto, the face of the tympan being partially broken out to show its interior, with the wires or spring-coils in the bracing, the said figure also showing a covering which may be employed, if desired, for the face of the tympan, said covering also being broken out. Fig. 2 is a detail showing in plan view a portion of the tympan, the same being broken out in different places to show its construction from top to bottom. Fig. 3 is a section on the line *x* of Fig. 2; and Fig. 4 is a section of a modi-



fied form of tympan, showing the wires of different diameters and the spring-coils also of different diameters.

Referring to the drawings, A represents the bed, and  $a$  the type, plate, or printing-surface or form of any well-known or 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 herein chosen to illustrate my invention, being flat and receiving upon it my improved tympan; but instead of the platen shown my improved tympan may be applied to a cylinder or roll such as used in power or cylinder presses. The platen is shown as 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  $B^2$  and  $B^3$  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 shown in the drawings is represented as composed of two layers or plies, each ply presenting wire or spring coils laid side by side, preferably, so that the turns of the wire in adjacent spring-coils will overlap one the other. The spring-coils in one ply are marked  $a^x$  and in the other ply  $b$ , the ply containing the wires  $a^x$  constituting the face of the tympan. These spring-coils laid side by side may be wound or connected operatively together in any usual or suitable manner; but I have herein shown said coils as connected with mesh-wires  $a'$  and  $b'$ . The spring-coils  $a^x$ , contained in the upper layer or ply of the tympan, are shown as braced internally by the application between the wire or the turns of the spring-coils of a yielding bracing or substance  $a^2$ . This yielding bracing or substance may and preferably will be of india-rubber or other equivalent yielding substance or material, 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 of the wire or spring coils, and thereafter by pressure and heat the bracing or compound may be cured, leaving it more or less elastic, according to the firmness desired for the face of the tympan. This 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 Figs. 3 and 4, wherein the spring-coils  $a^x$  are so covered, the yielding substance being embedded in said wire or spring coils by pressure, thus bracing up the spring-coils in every direction. Usually, however, only the uppermost series of wires or spring-coils  $a^x$  need to be braced by the yielding substance. The drawings show two plies or layers of spring-coils, one superimposed on the other. The wires  $a^x$  and  $b$  of the two plies, as shown in Figs. 2 and 3, are of the same diameter, and the coils are of the same diameter; but in Fig. 4 the wires of the spring-coils in the upper ply are of smaller diameter than in the lower ply.

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

If desired, a covering  $B^2$  and  $B^3$ , of paper or cloth, may be added to the auxiliary bed to form a face to be opposed to the type.

The drawing Fig. 2 shows portions of the spring-coils  $a^x$  exposed through the surface of the bracing.

Having described my invention, what is herein claimed, it being tributary to the invention claimed in my application, Serial No. 675,258, filed March 26, 1898, is as follows:

1. A tympan for printing, it consisting of a base composed of wires adapted to yield, and a superimposed face layer composed of an independent series of spring-coils braced one against the other by the addition thereto of a yielding substance, substantially as described.

2. A tympan for a printing-press, said tympan being composed of two layers or plies superimposed, each layer or ply containing a plurality of connected individual wires, the wires of the upper layer being of smaller diameter than in the under layer, one of said series of wires being internally braced by the incorporation therewith of a yielding substance, 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,  
MARGARET A. DUNN.