No. 705,011. Patented July 22, 1902.

A. S. ALLEN.

TYMPAN SURFACE FOR PRINTING PRESSES.

(Application filed Oct. 29, 1898.)

(No Model.)

Fig. 1.

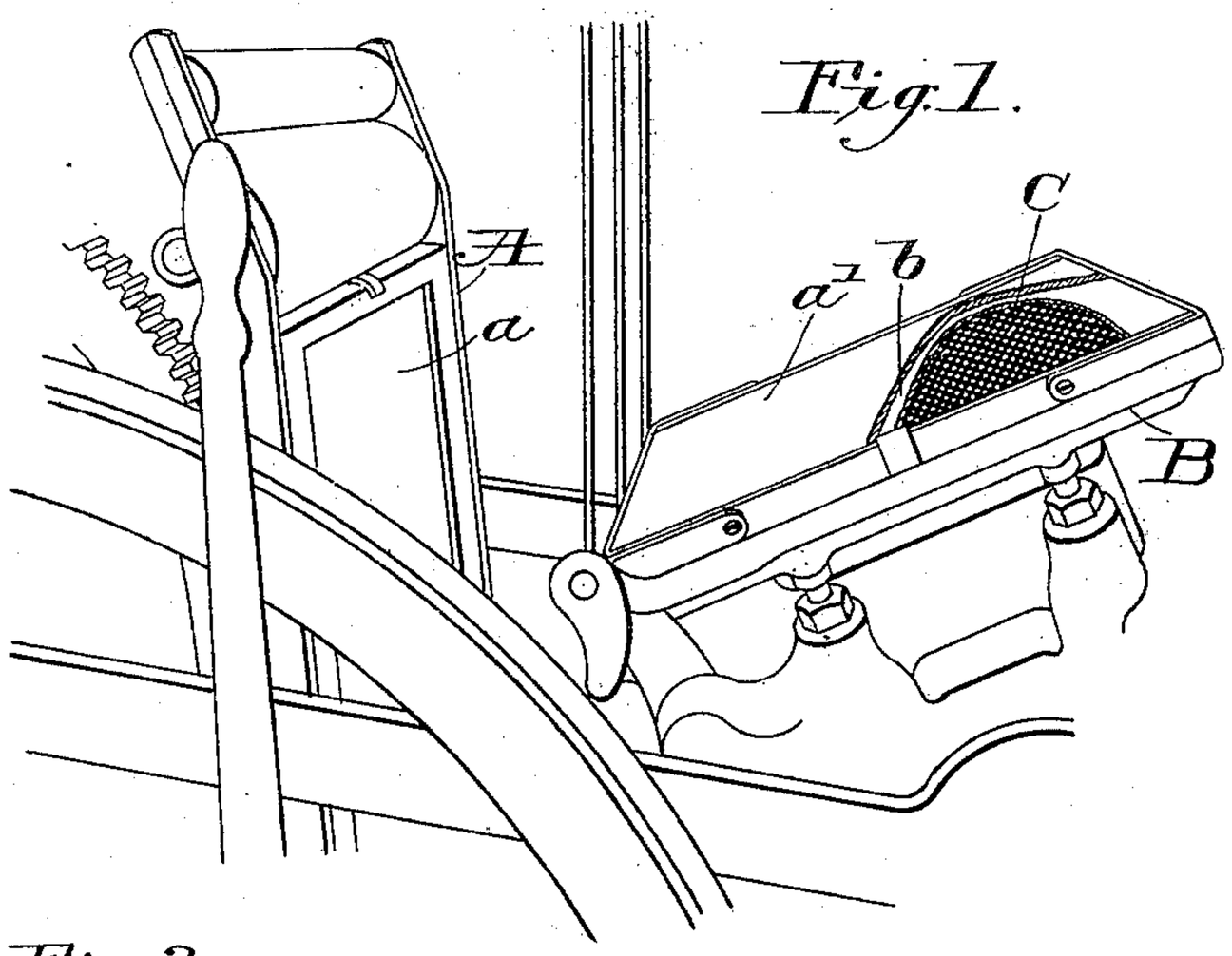


Fig. 2.

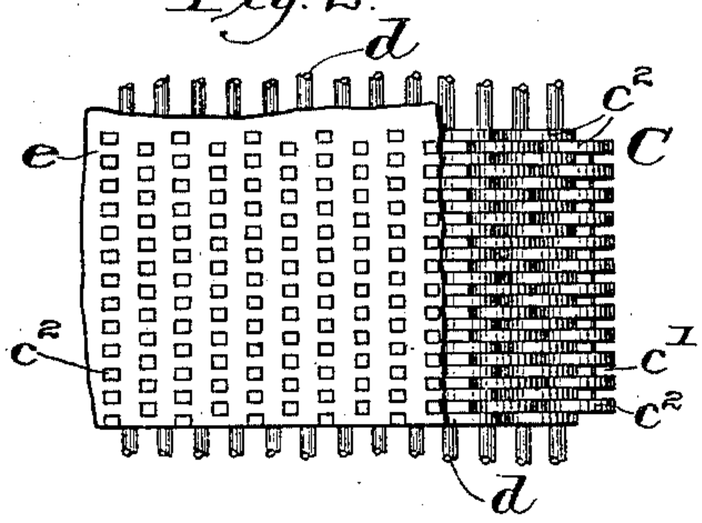


Fig. 3.

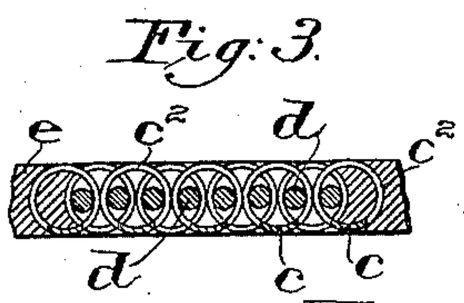


Fig. 4.

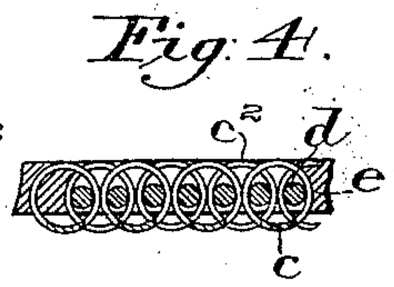


Fig. 5.

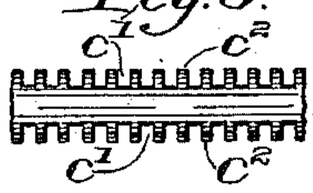


Fig. 6.

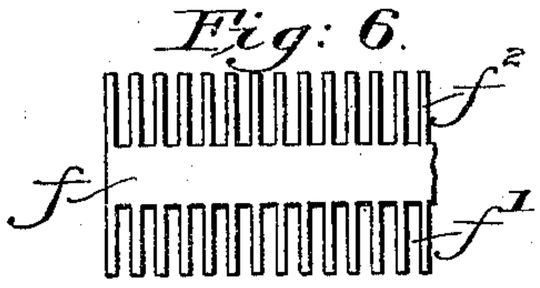


Fig. 7.

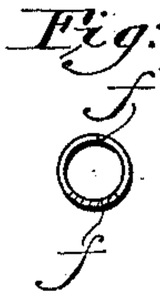


Fig. 10.

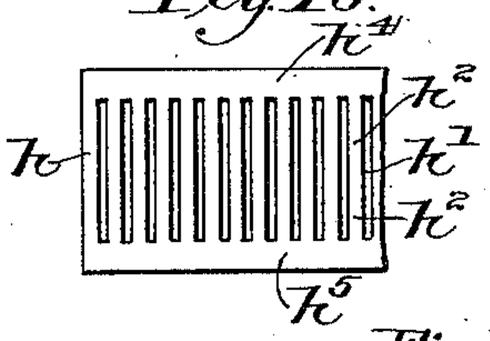


Fig. 10ª

Fig. 10ᵇ.

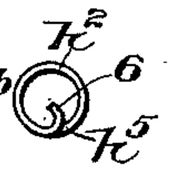


Fig. 8.

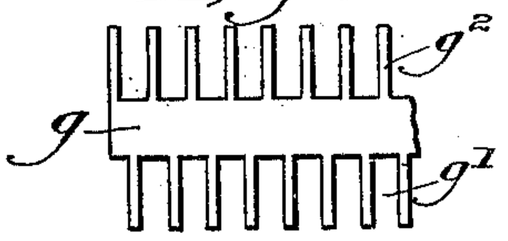


Fig. 9.

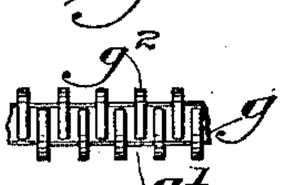


Fig. 12.

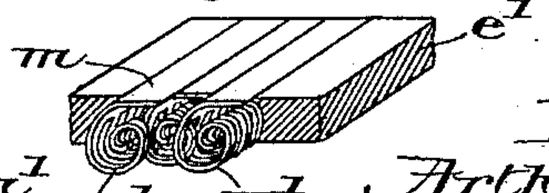
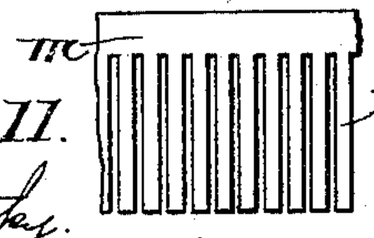


Fig. 11.



Witnesses
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Inventor:
Arthur S. Allen
by Lorosby & Gregory
Atty's.

UNITED STATES PATENT OFFICE.

ARTHUR S. ALLEN, OF BOSTON, MASSACHUSETTS.

TYMPAN-SURFACE FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 705,011, dated July 22, 1902.

Application filed October 29, 1898. Serial No. 694,861. (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 Tympan-Surfaces 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.

This invention is intended as an improvement on that described in United States Patent No. 613,218, dated October 25, 1898. That patent shows a tympan-surface containing springs, having incorporated with them a yielding bracing, the springs therein shown being represented as composed of wire. Instead of using springs composed of wire I have herein shown a spring composed of sheet metal.

One part of this invention therefore consists in a tympan composed of a series of sheet-metal springs embedded in an elastic or yielding bracing.

Another part of this invention includes a sheet-metal spring containing a series of lateral slots and projections, the projections of one spring entering the slots of another adjacent spring when said springs are laid side by side in order to make a tympan, the series of springs being maintained operatively in engagement by the bracing which enters more or less the interstices or spaces between the said springs. If desired, I may use in connection with these sheet-metal springs mesh-wires, which may be extended through the spaces of the springs when they are interlocked.

I have herein shown my invention as embodied in several different working forms, all of which are equivalent, however.

Figure 1 shows a sufficient portion of one well-known form of press with my improved tympan in position thereon. Fig. 2 is a much-enlarged detail, with its face broken out, of the tympan represented in Fig. 1. Fig. 3 is a cross-section of the tympan represented in Fig. 2, the bracing being shown as extended substantially throughout the thickness of the springs. Fig. 4 shows substantially the same sheet-metal springs, but with the bracing extended but partially throughout, the bracing starting from the outer face of the tympan and extending partially through the same. Fig. 5 is a plan view of a part of the sheet-metal spring represented in Figs. 2 to 4. Fig. 6 shows a blank from which to make a modified form of sheet-metal spring. Fig. 7 shows the said blank bent into the form of a spring. Fig. 8 shows yet another form of plate from which a spring may be made, and Fig. 9 shows the spring made from said plate. Fig. 10 shows yet another form of plate from which a spring may be made. Fig. 10^a shows a spring made from the plate represented in Fig. 10. Fig. 10^b shows a modified form of spring which may be made from the blank, Fig. 10, by curving the same transversely throughout its length and letting one edge of the blank come within the opposite edge. Fig. 11 shows yet another form of sheet-metal blank, and Fig. 12 shows said blank bent into the form of a spring and inclosed with others in a bracing.

Referring to the drawings, A represents a bed or carrier for the type, plate, or printing-surface *a*, which may be of any usual or well-known construction common to printing-presses working on reciprocating or rotary principles.

B represents a platen, it being shown herein as 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 commonly used in power or cylinder presses.

In Fig. 1, *a'* represents, let it be supposed, a covering for the tympan, it being composed, for instance, of a sheet of paper or cloth, held in place thereon in any usual or suitable way, and underneath this covering I have shown applied to the face of the tympan a leveling-sheet *b*, which may be of any usual or suitable material, preferably a substantially hard material which may yield a little under very considerable pressure.

In Fig. 1, C represents the face of my improved tympan supported on the platen B. Figs. 2 and 3 show, much enlarged, this tympan-surface, Fig. 2 showing it in plan with some of the bracing removed, and Fig. 3 showing it in section.

Referring to Figs. 2 and 3, *c* shows a series of sheet-metal springs, they being represented as composed of a sheet-metal tube having

a series of slits c'. These sheet-metal springs so formed are pressed together side by side, so that the projections c^2 left between the spaces c' of one spring will enter the spaces of the adjacent spring, as best represented in Figs. 3 and 4, and these springs are thus interlocked and made to overlap one the other, and I may and will preferably then insert in the spaces of two springs mesh-wires d, they locking the springs firmly together. I then apply to the springs a bracing e, which may and preferably will be composed of some elastic or yielding material, which may be such as described in said patent, or instead I may use any well-known elastic material capable of being applied in the interstices of the spring. This bracing may be applied by pressure, and the bracing may be more or less yielding, according to the degree of elasticity required for the tympan. I prefer that the projections c^2 of the springs be exposed at the face of the tympan, the exposed surface of the backing being in substantially the plane, however, occupied by the exposed surfaces of the series of projections of the series of springs.

In Fig. 4 I have shown the bracing as applied to the locked spring from its face only partially through the series of springs.

Although I prefer that the bracing shall extend from one to the other side of the series of springs, yet this invention is not limited in that respect, as the bracing may extend more or less throughout the springs from their upper surface, as represented in Fig. 4.

Fig. 5 shows a view of one of the springs of Figs. 2 to 4 looking at it at its under side viewing Fig. 3.

In Fig. 6 I have shown a steel plate f, notched at its opposite edges, as at f', to leave a series of fins or projections f^2. This plate so notched may be made into the form of a tube, as represented in Fig. 7, thus forming of it a spring, it differing from the spring previously described only in the fact that the projections extended from f meet at f^3. This form of spring has a little more elasticity than the form of spring represented in Fig. 3.

Fig. 8 shows yet another form of plate g, having notches, as at g', to leave a series of projections g^2; but these projections are dodged or staggered one with relation to the other at opposite sides of the center portion of the plate, so that when the blank shown in Fig. 8 is bent into the form of a tube to make of it a spring the projections on one edge of the blank may be made to enter spaces at the opposite edge of the blank, as represented in Fig. 9.

Fig. 10 shows yet another form of blank composed of sheet metal, it representing a plate h, having a series of slots h' extended partially across the same, said slots leaving between them a series of projections h^3. These slots and projections are parallel, and this plate may be formed into a tube by bringing the edges h^4 h^5 thereof together, as represented in Fig. 10^a.

Fig. 10^b shows the blank, Fig. 10, curved transversely throughout its length; but instead of the two edges of the blank abutting together, as in Fig. 10^a, I allow one edge of the blank to pass its opposite edge, as at 6, Fig. 10^b.

Fig. 11 shows yet another form of blank m, it consisting of a sheet-metal plate slotted at but one edge for a considerable distance throughout the width of the plate, leaving a series of projections m' between the slots. This plate is then curled into a convolute form, as represented in Fig. 12, to form springs, and said springs are laid side by side, so that the projection of one spring enters the spaces of an adjacent spring and interlocks, substantially as shown in Fig. 12, and the said springs are strengthened and supported by means of a bracing e' applied thereto.

A sheet-metal spring made as herein described has not the elasticity of a wire spring; yet in practice a sheet-metal spring of the peculiar construction herein shown and described in connection with the bracing will yield sufficiently to enable the tympan to adapt itself to any unevenness of surface in the type, plate, or printing-surface used to make the impression on the paper supported upon the covering of the tympan.

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

1. A tympan containing sheet metal cut to form a spring, a series of such springs laid side by side, the projections of one spring entering the spaces of an adjacent spring, and a bracing applied to said springs and entering the interstices thereof.

2. A tympan composed of a series of sheet-metal springs presenting a series of slots and projections, the projections of one spring entering the spaces of an adjacent spring, to thereby bring the supporting portions of each projection at the surface of the tympan more closely together, and a bracing applied to said springs and entering the interstices thereof, substantially as described.

3. In a tympan, a series of sheet-metal springs having a series of slots and projections, the projections of one spring entering the slots of an adjacent spring, and a mesh-wire inserted longitudinally through a plurality of said springs, to thus lock them positively together, and a bracing applied to said springs, and filling the interstices thereof, substantially as described.

4. In a tympan, a series of sheet-metal springs having a series of slots and projections, said springs being laid side by side, the projections of one spring entering the slots of an adjacent spring, substantially as described.

5. In a tympan, a series of sheet-metal springs having a series of slots and projec-

tions, said springs being laid side by side, the projections of one spring entering the slots of an adjacent spring, and mesh-wires inserted longitudinally through a plurality of said springs, to lock them positively together, 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,
EDITH M. STODDARD.