

J. F. GOLDING.
PROCESS FOR MAKING METAL FABRIC.
APPLICATION FILED JAN. 29, 1912.

1,090,843.

Patented Mar. 24, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

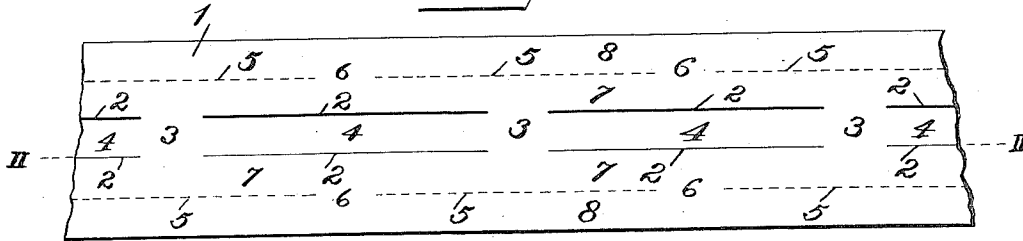


Fig. 2.

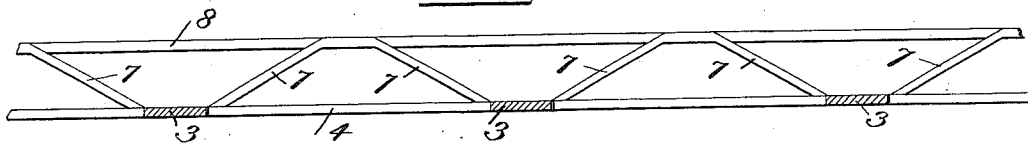
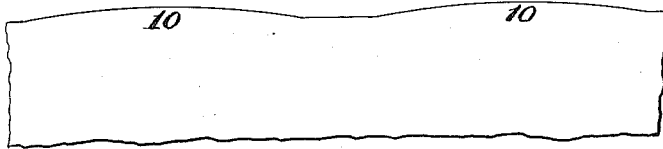


Fig. 12.

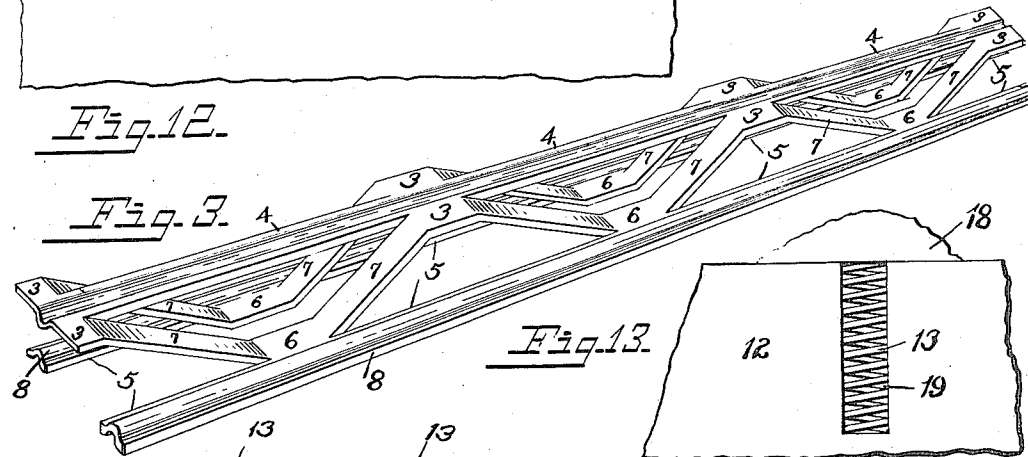


Fig. 3.

Fig. 13.

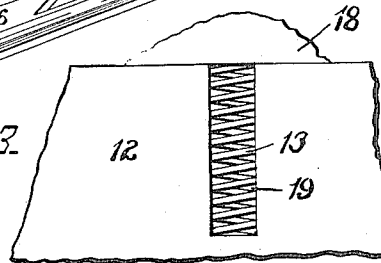
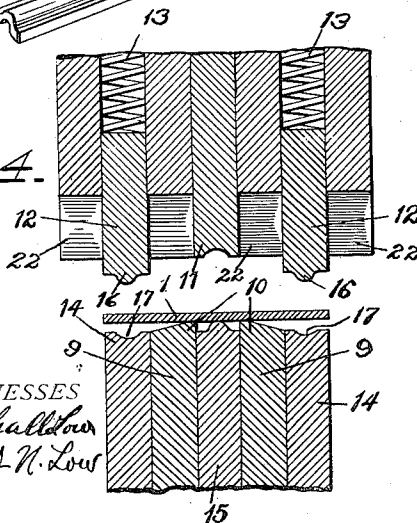
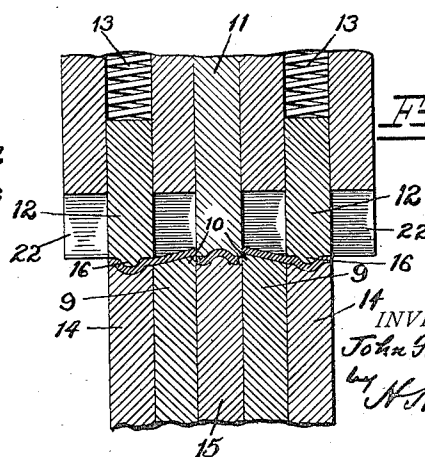


Fig. 4.



WITNESSES
Marshall Law
Russell N. Low

Fig. 5.



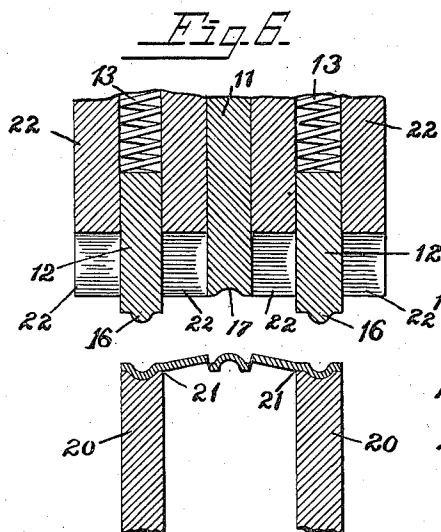
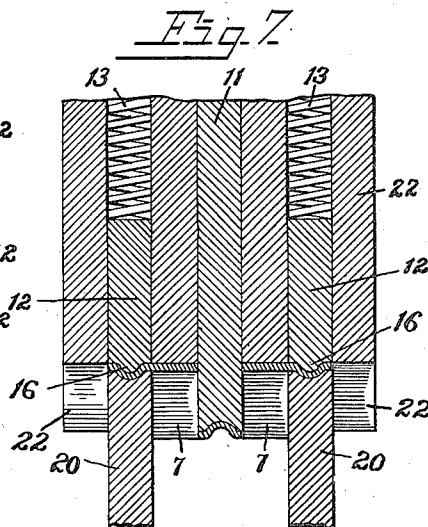
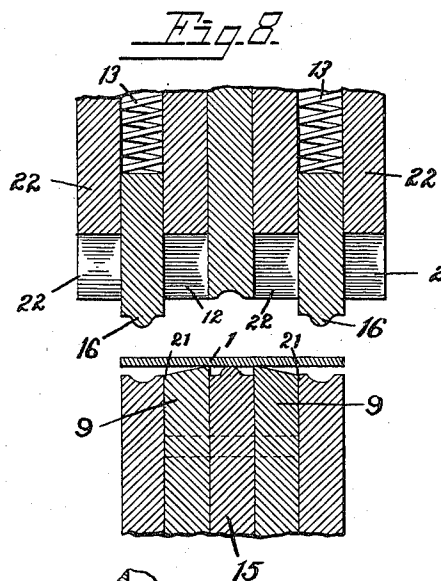
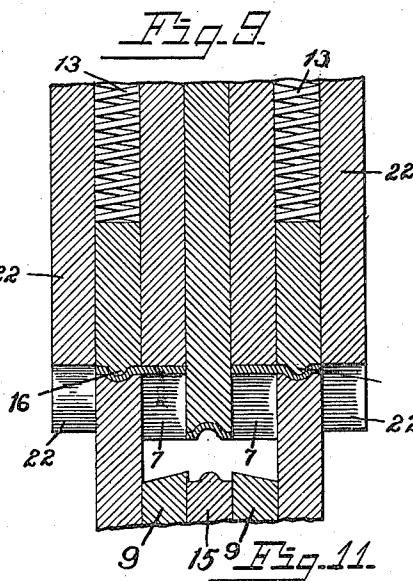
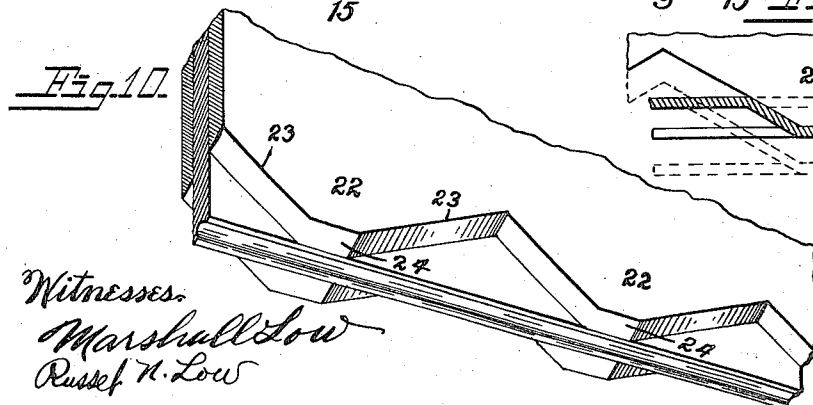
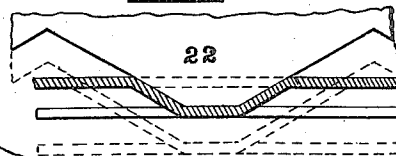
INVENTOR
John F. Golding
by H. N. Low
Attorney

J. F. GOLDING.
 PROCESS FOR MAKING METAL FABRIC.
 APPLICATION FILED JAN. 29, 1912.

1,090,843.

Patented Mar. 24, 1914.

2 SHEETS—SHEET 2.



Witnesses:
 Marshall Low
 Russell H. Low

Inventor -
 John F. Golding
 by N. N. Low
 attorney

UNITED STATES PATENT OFFICE.

JOHN F. GOLDING, OF WASHINGTON, DISTRICT OF COLUMBIA.

PROCESS FOR MAKING METAL FABRIC.

1,090,843.

Specification of Letters Patent.

Patented Mar. 24, 1914.

Application filed January 29, 1912. Serial No. 674,134.

To all whom it may concern:

Be it known that I, JOHN F. GOLDING, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Processes for Making Metal Fabric, of which the following is a specification.

My improvements relate to the manufacture of trussed metal from an integral sheet or plate, so as to produce metal strips or metal fabrics at a distance from each other and united by inclined or diagonal truss members, all integral with each other. This result is attained by a certain process of manufacture, which I will proceed to describe in connection with suitable instrumentalities for carrying out such process.

The product of the process and the manner of and suitable means for working the latter are illustrated in the accompanying drawings, but it is to be understood that my invention is not confined to all of the details illustrated and described.

In the said drawings:—Figure 1 is a plan view of a sheet or plate of metal having indicated thereon by full and dotted lines the slits which are made therein in the working of the said process. Fig. 2 is a longitudinal section on line II—II of Fig. 1 with the sheet completely formed according to the said process. Fig. 3 is a perspective view of a portion of the completed fabric, inverted as compared with Fig. 2. Fig. 4 is a sectional view showing a portion of a cutting mechanism, and the metal sheet to be operated upon, for making the first set of slits, with the uppercutting devices raised. Fig. 5 is a similar view showing the cutters brought together to operate upon the metal sheet. Fig. 6 is a sectional view of another mechanism, shown as ready to operate upon the sheet which has been slitted with the first set of slits, to cut the second set of slits, stretch the diagonal members and complete the fabric. Fig. 7 is a similar view with the parts of the machine brought together and the operation completed. Figs. 8 and 9 are similar views of a cutting and stretching mechanism adapted to first cut the first set of slits, and then to cut the second set of slits and simultaneously stretch and form the fabric. Fig. 10 is a perspective view of a portion of one of the upper cutting, stretching and fabric forming bars. Fig. 11 is a side view of a portion of said bar, show-

ing the metal in section, the cutting and forming operation being about half completed. Fig. 12 is a side view of a portion of one of the cutter bars which form the first set of slits. Fig. 13 is a side view of a portion of one of the presser bars.

Referring to the drawings:—1 is a sheet of wrought metal to the shaping of which the process is to be applied. In the instance illustrated the sheet is relatively thin and of uniform thickness but the same process can be applied to thicker metal, say one-quarter of an inch thick, or to wrought metal plates which are ribbed in the direction of the slits and are consequently not of uniform thickness. The metal operated upon is to have suitable softness and ductility, such as a low carbon or mild steel of good quality.

In operating upon the plate 1 according to the process I first cut therein one or more series of slits 2 arranged as indicated in Fig. 1 in pairs, leaving uncut portions or bonds 3 between the ends of one pair of slits and the ends of the next pair. This operation partially cuts out along the slits 2, certain strips or strands 4 of the metal which are to become what may be termed the chords of one surface or side of the finished fabric or sheet. I then cut in the sheet other pairs of slits 5 arranged as shown in Fig. 1 in dotted lines, at the outer sides of the pairs of slits 2 and opposite to the bonds 3. Between the ends of the slits 5 are left bonds 6. The sheet is thus formed with several series of partly separated but connected strips or strands of metal in addition to the strips 4; namely strands 7 next to the slits 2 and bonds 3, and strands 8 at the outer sides of the strands 7 and slits 5. As and while the slits 5 are being cut the strands 7 and bonds 3 are depressed or forced out of the original plane of the sheet 1 and toward the other plane or side of the sheet which the completed product is to have. This is permitted by reason of the slits 2 preliminarily produced, which leave the contiguous parts of the metal free to be cut, and simultaneously stretched and formed. The strands 8 and bonds 6 are left in the first plane, the strands 4 and bonds 3 are forced into the second plane of the sheet and the strands 7, between the bonds 3 and the bonds 6; become inclined, diagonal or truss members rigidly uniting and spacing apart the two surfaces of the finished fabric or product. The strands 4 become the chords of the second

plane of the sheet. In Fig. 2 the fabric is shown with the strands or chords 8 uppermost. In Fig. 3 the fabric is the other side up with the strands or chords 4 uppermost.

5 In the above described forcing or forming operation the two parts of each strand 7 are stretched sufficiently to accommodate the longer path in which they must extend, and so as to leave the chord strands 4 and 8 flat and in their respective planes. I may cor-
10 rugate some or all of the strands of the fabric, as indicated in Figs. 4 and 5 with respect to the chord strands, to give them greater stiffness, and also to narrow them somewhat
15 to facilitate the disengagement of the cutting and forming devices.

It will be understood that the sheet or plate may be formed with many more strands than are illustrated, both in width
20 and in length, only sufficient of the plate and fabric being shown to make the process clearly known. There may be great variety in the size of what may be termed the mesh of the fabric, from lathing mesh up to a
25 large mesh in a thick plate to be used for concrete reinforcement. The fabric is well adapted for partitions and also for slab reinforcement in concrete work.

A suitable instrumentality for forming
30 the first series of slits 2 is shown in Figs. 4 and 5, in which 9, 9 indicate lower cutters having upwardly projecting cutting edges 10 above which is placed the metal plate 1.
35 11 is an upper cutter which coöperates with the cutters 9 to produce the first set of slits 2. It will be understood that the cutter bars 9 and 11 are as long as the length of the fabric, which may be in process of manufacture. In Fig. 12 is shown a portion of
40 one of the cutter bars 10 viewed from its inner side. At 12 are shown presser bars backed by springs 13, which coöperate with bars 14 to hold the plate while the slits 2 are cut. The parts 12 and 14 and also the
45 cutter 11 and an opposing bar or die 15, are or may be formed with projections 16 and recesses 17 to corrugate certain strands of the fabric. A suitable pressure device 18, (Fig. 13) may force downward the parts 11
50 and 12, and as the cutter 11 finishes its stroke the springs 13 will be compressed into their recesses 19 (Fig. 13) and the pressure device 18 will act directly on the tops of the bars 12 and form the said corrugations in
55 the strands if they are desired.

The slits 2 having been produced by the means shown in Figs. 3 and 4, the sheet 1 is removed and inserted in proper position in the machine indicated in Figs. 6 and 7,
60 as shown in Fig. 6. In this machine lower stationary cutters are shown at 20 having cutting edges 21. With these cutters coöperate upper cutters 22 having inclined cutting edges 23 adapted to shear along the
65 inner faces of the cutters 20 and produce the

second set of slits 5. In Fig. 11 is seen one of the cutters 22 in the act of cutting a slit 5. The bottom of each cutter 22 is blunt and flat as shown at 24 and rests on the strand 7 at the bond 3. As the slit 5 is
70 made the metal of the strand 7 is stretched and elongated by the downward pressure of the cutter 22, and this is done gradually as the length of the slit 5 increases and as more and more metal is sheared off to form
75 the strand 7. All of the strands 7 in the whole sheet are thus being sheared off, stretched and formed at the same time. The chords 4 and 8 of the two surfaces of the fabric are left unaffected, being neither
80 stretched nor contracted but left flat, each in its own surface plane. The chords 8 remain resting on the cutters 20 and the chords 4 are carried down along with the bonds 3 (Fig. 7) by the bottom face of the
85 bar 11.

In Figs. 8 and 9 are shown a machine in which the cutting of the slits 2 is first performed by the same or similar devices which have been described in Figs. 4 and 5.
90 Then the lower cutters 9 and bar 15 recede (Fig. 9) leaving the parts in position to perform the second slitting operation and the simultaneous stretching of the strands
95 7, as described in connection with Figs. 6 and 7. The machine of Figs. 8 and 9 has the functions of both of the machines shown in Figs. 4 and 5 and Figs. 6 and 7.

It will be seen that the article or fabric produced by the process described comprises a series of strands 8 parallel with
100 each other and in the same plane—they being marginal strands in that embodiment of my invention illustrated in Fig. 3—and a set or series of strands 4 intermediate between the strands 8 and located in a plane
105 different from that in which are the strands 8. It will also be observed that the parallel strands 8 maintain the same relations, with reference to each other, throughout the entire process, that is to say, they are not separated from or moved toward each other.
110

What I claim is:—

1. The herein described process of making metal fabric, which consists in first
115 forming slits in a metal sheet or plate which partly cut out and free the opposite edges of intermediate chord strands for one side of the fabric, and then cutting other slits at the sides of but alternating with the first
120 mentioned slits to form diagonal trussing strands, and chord strands located at the sides of the said intermediate chord strands for the other side of the fabric, and simultaneously stretching the diagonal strands
125 relative to the chord strands, thus separating the chord strands of the metal into two planes at a distance from each other at opposite sides of the fabric.

2. The herein described process of mak- 130

ing metal fabric, which consists in first forming slits in a metal sheet or plate which partly cut out and free the edges of the chord strands for one side of the fabric, and
5 then cutting other slits at the sides of but alternating with the first mentioned slits to form diagonal trussing strands and chord strands for the other side of the fabric and simultaneously stretching the diagonal
10 strands relative to the chord strands, thus separating the chord strands of the metal into two planes at a distance from each other at opposite sides of the fabric, and corrugating and narrowing certain of the
15 strands during the said process.

3. The herein described process of making metal fabric from a single bar of metal which consists in forming a series of pairs of slits in the bar, leaving uncut portions
20 between the ends of one pair of slits and the ends of the next pair, thus partially cutting out strands which become the chord

strands of one surface of the fabric, forming in the bar other slits parallel with the edges of the bar and alternating with the
25 slits which form the aforesaid intermediate strands, and thus partially cutting out parallel strands which become the chord strands for the other surface of the fabric and are
30 arranged laterally on opposite sides of the said intermediate strands and in staggered relation thereto, and then separating the said intermediate and parallel strands from
each other and simultaneously stretching the metal uniting them, which form diagonal
35 connecting strands between the chord strands.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. GOLDING.

Witnesses:

H. N. Low,

N. CURTIS LAMMOND.