

No. 742,811.

PATENTED OCT. 27, 1903.

W. F. WILMOTH, E. I. SMITH & S. GOLLIEK.

FIREPROOFING CONSTRUCTION.

APPLICATION FILED OCT. 25, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

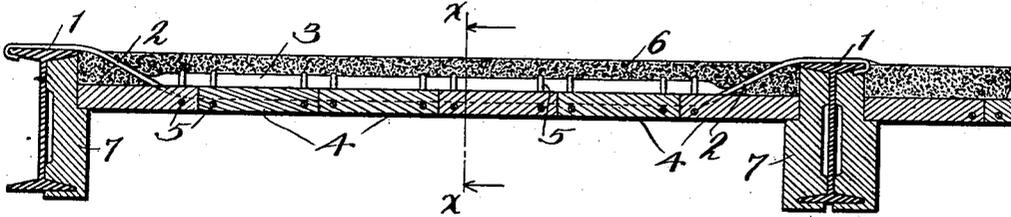


Fig. 2.

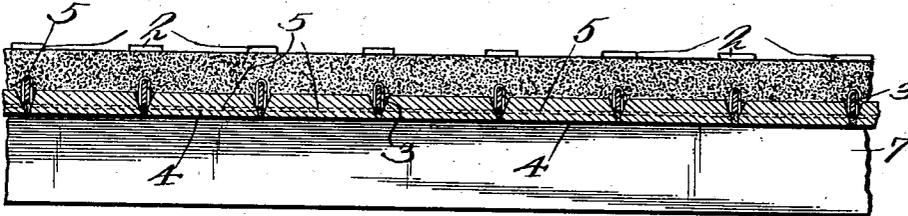
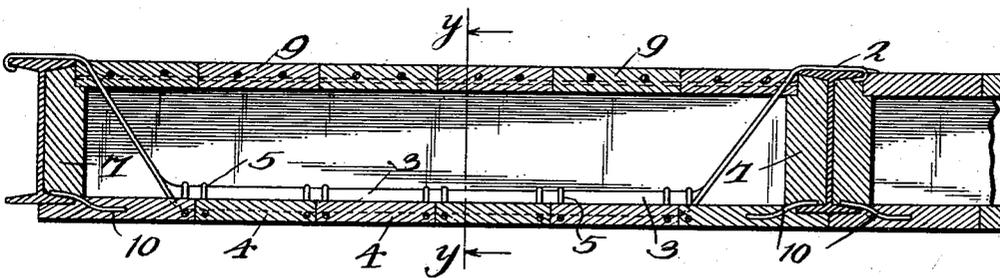


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4

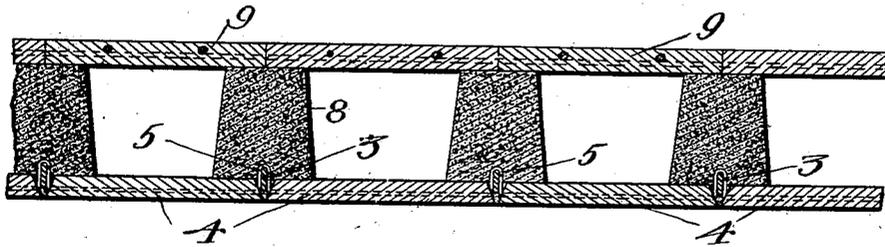


Fig. 5

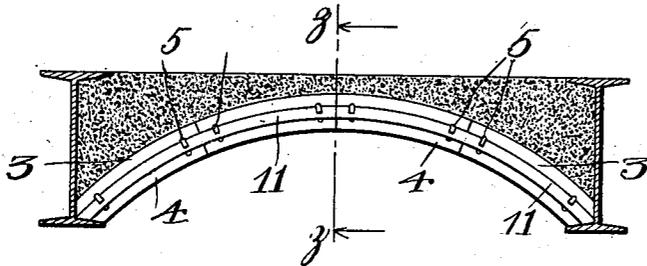
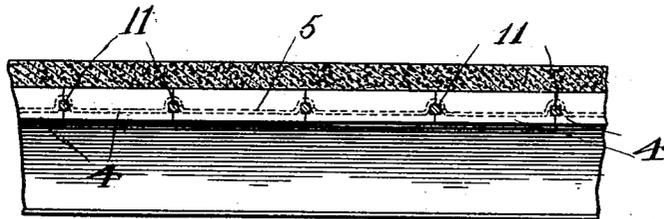


Fig. 6



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UNITED STATES PATENT OFFICE.

WILLIAM F. WILMOTH AND EDWARD I. SMITH, OF NEW YORK, N. Y.,
AND STANLEY GOLLIEK, OF JERSEY CITY, NEW JERSEY, ASSIGNORS
TO CEMETAL FIREPROOFING COMPANY, OF NEW YORK, N. Y., A
CORPORATION OF NEW YORK.

FIREPROOFING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 742,811, dated October 27, 1903.
Application filed October 25, 1902. Serial No. 128,721. (No model)

To all whom it may concern:

Be it known that we, WILLIAM F. WILMOTH,
residing in the borough of Manhattan, ED-
WARD I. SMITH, residing in the borough of
5 Brooklyn, in the city and State of New York,
and STANLEY GOLLIEK, residing in Jersey
City, in the county of Hudson and State of
New Jersey, citizens of the United States, have
invented certain new and useful Improve-
10 ments in Fireproofing Construction; and we
do hereby declare the following to be a full,
clear, and exact description of the same, such
as will enable others skilled in the art to which
it appertains to make and use the same.

15 Our invention relates to improvements in
fireproofing construction for the floors and
ceilings of buildings and the like; and it con-
sists in novel means for supporting a floor
and ceiling from walls or floor-beams and in
20 various other features of construction, com-
bination, and arrangement of parts, as here-
inafter pointed out.

The invention herein illustrated and de-
scribed is a modification of the fireproofing
25 construction covered by the application of
W. F. Wilmoth for Letters Patent filed May
10, 1902, Serial No. 106,672. Like that con-
struction, the one herein described and
claimed involves the use of suspension mem-
30 bers or suspenders secured at the ends to
floor-beams or other suitable means of sup-
port and constituting tension members, cen-
ter pieces, supports therefor carried by said
suspenders, and concrete or other flooring laid
35 upon the center pieces; but the fireproofing
construction herein described differs from
that of the said former application in the form
and construction of the suspenders, in the
40 form and construction of the center-piece sup-
ports, in the means employed for supporting
the flooring when a flush ceiling is desired,
and in various other features.

The fireproofing constructions now com-
monly used usually comprise a body of con-
45 crete or similar material, which may be ap-
plied in a plastic condition, and a series of
metal supports therefor, the whole suspended
from floor-beams which are themselves often-

times embedded in the concrete. In order
to insure good work, it has been found nec- 50
essary to employ temporary or false centering,
usually of wood, to support the concrete or
other plastic material while it is being laid
and while it is setting, the centering being
erected in one portion of the building and 55
the concrete laid and then after the concrete
has set the centering being moved to another
part of the building and the operation re-
peated. The expense of this centering is con-
siderable, as is the expense of erecting it and 60
taking it down and moving it to another part
of the building, and there is a considerable
waste of material. Also the laying of the
floors can only progress slowly, since the work
must proceed intermittently, unless a very 65
large quantity of centering material is used.
Instead of employing wood centering woven
wire or similar material is often placed be-
tween the floor-beams to support the concrete;
but since the concrete works through the 75
meshes of such material to a considerable ex-
tent and since the woven wire tends to bag
when the concrete is rammed in laying it plas-
ter cannot be laid directly on the under sur-
face of the floor thus formed without great 75
waste of material.

The objects of our invention are to avoid
the use of false centering, to support the
concrete or other plastic material in an im-
proved manner while it is being laid and 80
while it is setting, to insure the formation of
a good under surface upon which plaster may
be laid directly, to permit the making of the
metal parts of the construction in standard
sizes and the erection thereof without fitting, 85
bending, or other change, to protect the
metal parts from the action of fire or water,
to avoid the use of combustible furring-strips
when an air-chamber is to be provided be-
tween the ceiling and the concrete body above, 90
to cause the concrete to dry rapidly, and to
make the whole construction strong, simple,
and relatively inexpensive.

We will now proceed to describe our in-
vention with reference to the accompanying 95
drawings, in which certain forms of fireproof-

ing construction embodying our invention are illustrated, and will then point out the novel features in claims.

In the drawings, Figure 1 shows a section of a floor and ceiling on a plane transverse to the floor-beams. Fig. 2 shows a section on the line X X of Fig. 1 at right angles to said figure. Fig. 3 shows a section similar to Fig. 1 of the construction employed when a flush ceiling is desired. Fig. 4 shows a section of the construction of Fig. 3 on line Y Y of that figure. Fig. 5 is a sectional view showing a construction which may be employed when an arched ceiling is desired. Fig. 6 shows a section of the construction of Fig. 5 on the line Z Z of that figure.

Referring now to the drawings and at first to Figs. 1 and 2 thereof, the said figures show floor-beams 11 of the usual I form. From the tops of these beams are hung suspenders 2, the ends of which are hook-shaped and hook over the tops of the floor-beams. These suspenders are formed from flat bars or straps and are not straight throughout, but incline downwardly from their ends toward a central portion 3, which is substantially straight. Furthermore, the bars from which these suspenders are formed have their central portions twisted at right angles to the end portions, so that while the side faces of said bars are horizontal at the ends thereof they are vertical in the central portions 3 thereof. The central portions 3 of the suspender-rods are depressed both in order that the concrete body or flooring may not project above the tops of the floor-beams and in order that the inclined portions of said suspenders may act efficiently as tension members in carrying the weight of the concrete body and the objects supported thereon. This construction also permits ready and accurate calculation of the strains imposed upon the different portions of the suspenders, the central portion of each suspender being substantially a beam uniformly loaded and supported at each end, the inclined end portions being substantially simple tension members. The central portions 3 of the suspenders are twisted at right angles to the end portions thereof in order that said central portion may be stiff and able to carry its load without bending. Between the suspenders 3 are placed center blocks 4, which are supported by yokes or center-block supports 5, hooked over the tops of the suspenders 3 and spanning the space between adjacent suspenders. These yokes may be formed of wire or small rods bent to the proper shape and embedded in the center blocks. When so embedded, they may be united to the center blocks so firmly as to reinforce said blocks, forming tension members thereof, and thereby greatly increasing the strength of the center pieces. Since these center-block supports connect adjacent suspenders, they greatly stiffen the whole structure and make slight lateral displacement of one or more suspenders impossible. Upon said center

blocks is laid the filling 6, of concrete or other suitable plastic material. This filling may be laid directly upon the center blocks as soon as the latter have been put in place. The sides of the center blocks are beveled, as shown, so that the concrete filling surrounds the suspenders 3 and comes into intimate contact therewith and also keeps the center blocks together. Because of the intimate contact of the concrete filling and the suspenders and center blocks the entire construction when complete constitutes substantially a composite beam of which the suspenders 3 are tension members and the concrete filling is a compression member. The sides of the floor-beams may be protected by side blocks 7, of cement, terra-cotta, or other suitable fireproofing material, and the outside center pieces, which because of the inclination of the end portions of the suspenders receive support from said suspenders only at one end, may rest at their other ends upon ledges formed in these blocks 7.

When a flush ceiling is desired and when the floor-beams are of considerable depth, the construction shown in Figs. 3 and 4 may be employed. In this construction suspenders 2 similar to those of Fig. 1 are employed, but the central portions 3 of these suspenders are depressed to nearly the lower edge of the flange-lines of the floor-beams. The center pieces 4 are suspended from these suspenders in the same manner as in the construction of Figs. 1 and 2. Instead of laying a continuous concrete filling upon the center pieces, as in Figs. 1 and 2, we prefer when the floor-beams are deep and a flush ceiling is desired to form cement or concrete ribs or beams 8, which are parallel with and are supported by the suspenders 2 and upon which are laid floor tiles or slabs 9. The construction thereby formed is very light and strong. The suspenders 2 form tension members of the concrete beams 8, being firmly united to said concrete by the intimate contact between the concrete and the metal. The floor-slabs 9 may be reinforced by metal rods, "expanded metal," or the like embedded in them. In this construction the end center pieces may be supported from the lower flanges of the floor-beams by metal strips 10, embedded in said center pieces and adapted to rest upon the lower flanges of the floor-beams, the end center pieces themselves fitting under the floor-beams and serving to protect the same.

When an arched ceiling is desired, the suspenders may be arched, members 11 abutting at their ends against the floor-beams, as shown in Figs. 5 and 6, the center pieces being suspended from these arched suspenders in the same manner as in the preceding figures.

It will be noted that the construction of the suspenders and center-piece yokes is such in all the forms of our invention herein illustrated and described that they may be manufactured in standard sizes and lengths and

bent to proper form at the factory and that automatic machinery may be used in the forming of these parts, if desired. When erecting, it is necessary merely to spring the suspenders slightly in order to hook them over the floor-beams. The center blocks previously formed and having their supporting-yokes embedded in them are then hung upon the center pieces, and the concrete filling may be applied immediately. It is therefore possible to erect the material very rapidly and with a minimum of labor. The suspenders need not be supported from the floor-beams, although this is usually most convenient. Any suitable support for the ends of the suspenders may be used.

It is obvious that our invention is susceptible to many variations and modifications without departing from the principles of construction herein set forth, and we do not limit ourselves to the particular details of construction and arrangement herein illustrated and described.

What we claim is—

1. The combination with a series of suspenders of oblong section suitably supported, the wider faces of the intermediate portions of said suspenders being vertical and the wider faces of the end portions of said suspenders being horizontal, of center-piece supports hung from said suspenders, and center pieces supported thereby.

2. The combination with a series of suspenders of oblong section suitably supported, the wider faces of the intermediate portions of said suspenders being vertical and the wider faces of the end portions of said suspenders being horizontal, of center-piece supports arranged transversely between adjacent suspenders, connecting the same, and supported thereby, and center pieces carried by said supports.

3. The combination with main supporting-beams, and a series of suspenders having hook-shaped ends hooking over and supported by said beams, the intermediate portions of said suspenders being of oblong section with the wider faces vertical, of center-piece supports hung from said suspenders, and center pieces supported thereby.

4. The combination, with main supporting-beams, and a series of suspenders hung from

the tops of said beams but depressed in their central portions below the tops of said beams, of center-piece supports arranged transversely between adjacent suspenders, connecting the same, and supported thereby, and center pieces carried by said supports.

5. The combination, with main supporting-beams, and a series of suspenders hung from the tops of said beams but depressed in their central portions below the tops of said beams, of center-piece supports arranged transversely between adjacent suspenders, connecting the same, and supported thereby, and center pieces carried by said supports, and concrete or other plastic material supported by said center pieces and suspenders.

6. The combination, with a series of suspenders suitably supported at the ends and depressed at and near the center, of center pieces between said suspenders, center-piece supports connecting said center pieces to the central depressed portions of said suspenders, and means for supporting the center pieces adjacent to the inclined portions of said suspenders.

7. The combination, with a series of suspenders suitably supported, center pieces between the same, and center-piece supports connecting the center pieces to said suspenders, of beams of concrete or other plastic material parallel with and embracing said suspenders and supported thereby and by the center pieces, the suspenders constituting tension members of said beams, and flooring supported by said beams.

8. The combination, with main supporting-beams, suspenders connected thereto and supported thereby and depressed at and near the center, and center pieces carried thereby, the lower surfaces of said center pieces forming a substantially continuous ceiling, of beams of concrete or other plastic material carried by said center pieces and suspenders, and flooring supported by said beams.

In testimony whereof we affix our signatures in the presence of two witnesses.

WILLIAM F. WILMOTH.
EDWARD I. SMITH.
STANLEY GOLLIEK.

Witnesses:

H. M. MARBLE,
C. F. CARRINGTON.