

Nov. 24, 1925.

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F. H. G. BRANDT ET AL

KNOCKDOWN SCAFFOLD

Filed Nov. 8, 1920

3 Sheets-Sheet 1

Fig. 1.

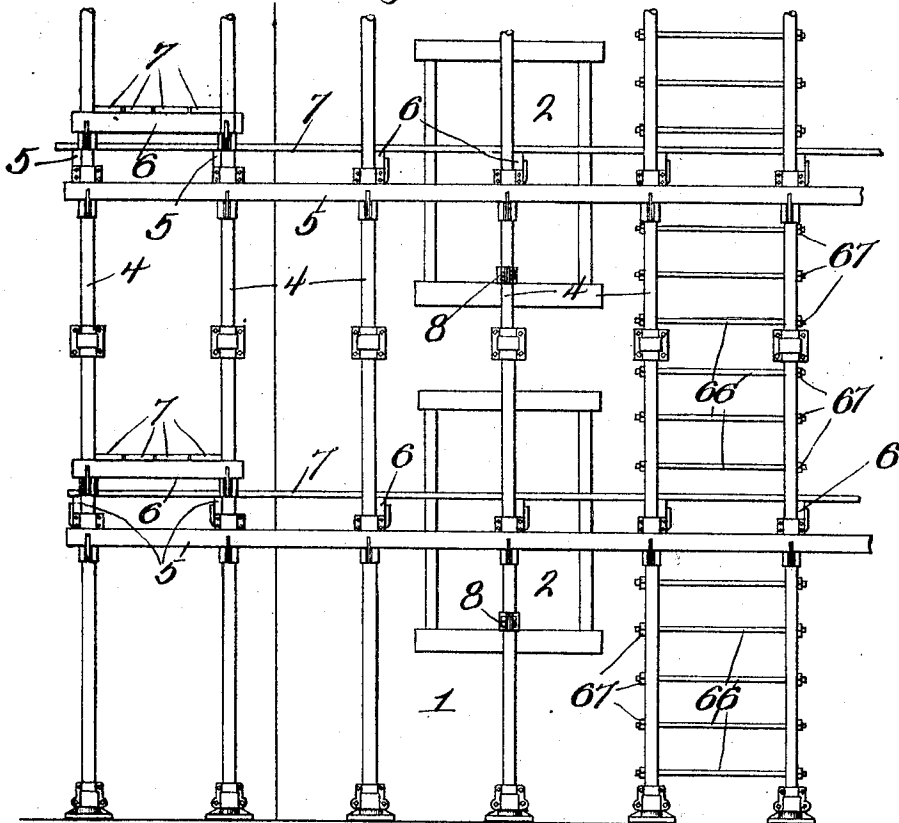
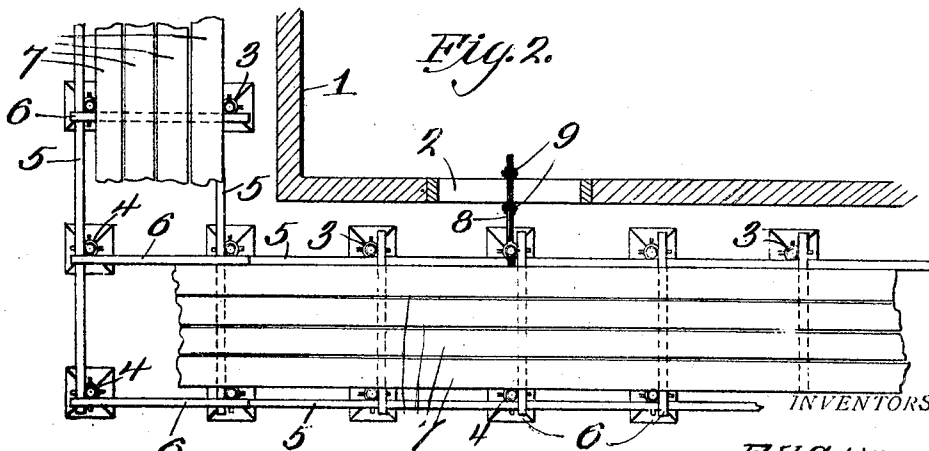


Fig. 2.



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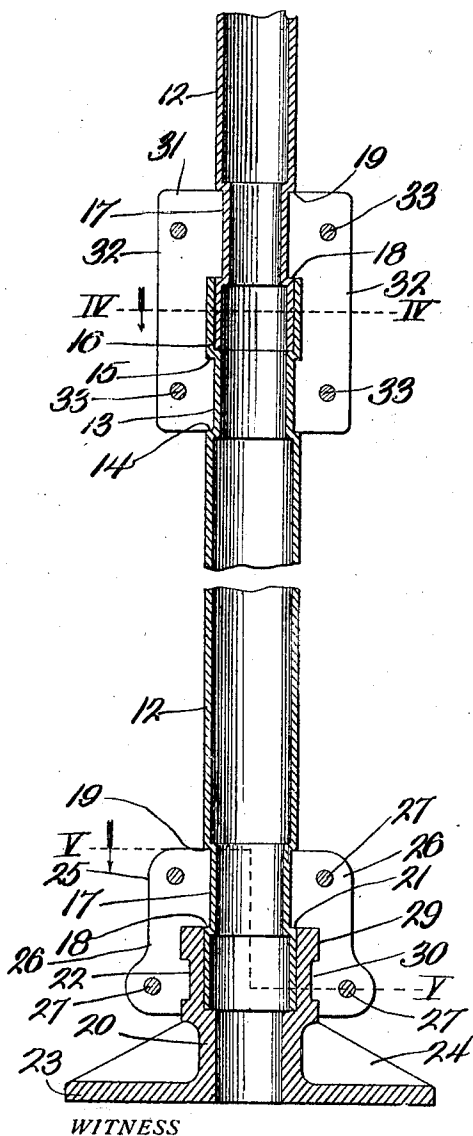
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Fig. 3.



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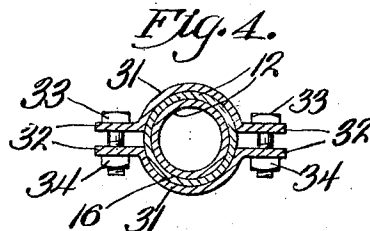
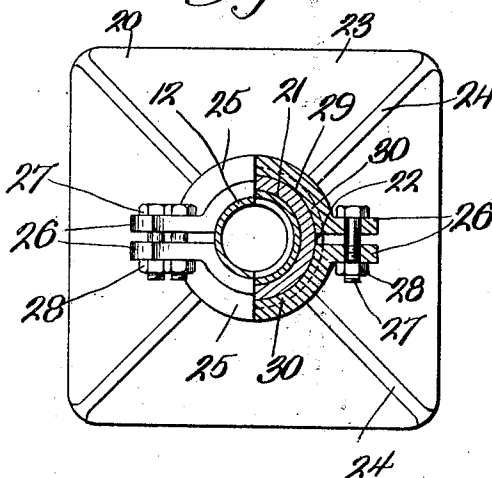


Fig. 5.



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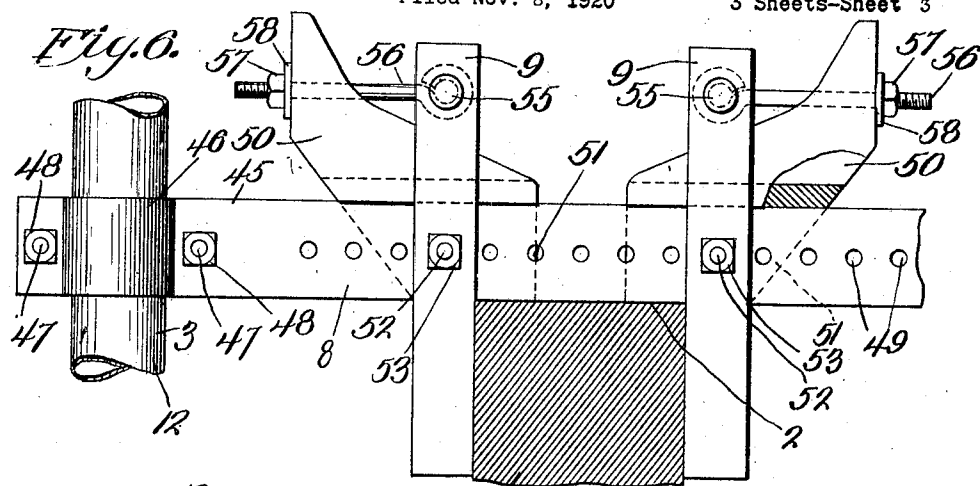
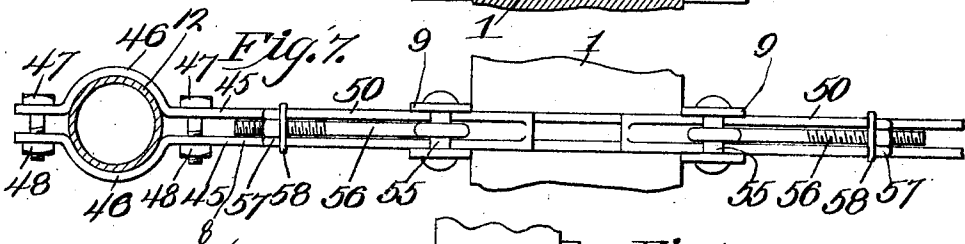
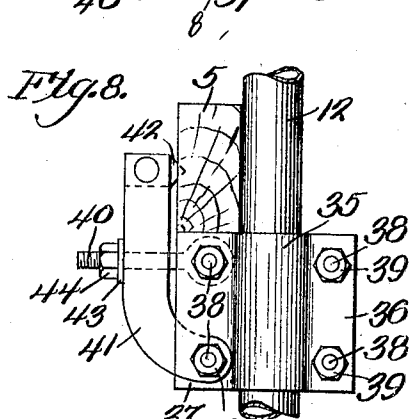
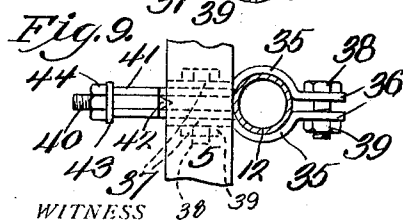
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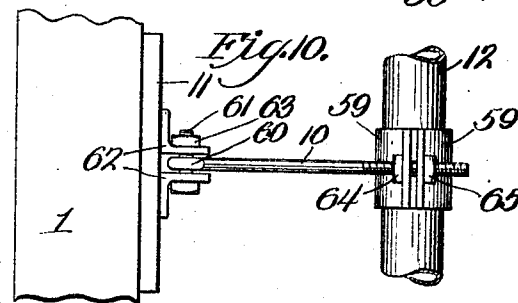
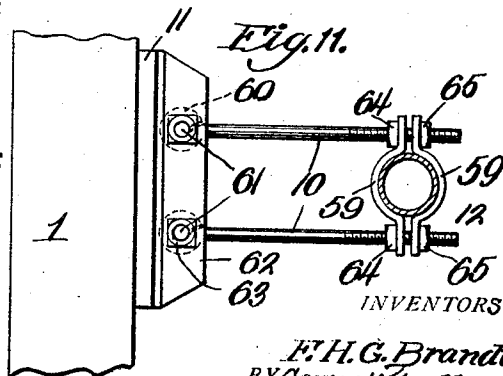
KNOCKDOWN SCAFFOLD

Filed Nov. 8, 1920

3 Sheets-Sheet 3



WITNESS



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UNITED STATES PATENT OFFICE.

FOKKO H. G. BRANDT, OF KANSAS CITY, KANSAS, AND GEORGE K. KRELL, OF KANSAS CITY, MISSOURI.

KNOCKDOWN SCAFFOLD.

Application filed November 8, 1920. Serial No. 422,747.

To all whom it may concern:

Be it known that we, FOKKO H. G. BRANDT and GEORGE K. KRELL, citizens of Germany, and residents, respectively, of Kansas City, county of Wyandotte, State of Kansas, and Kansas City, county of Jackson, State of Missouri, have invented a certain new and useful Improvement in Knockdown Scaffolds, of which the following is a complete specification.

This invention relates to knockdown scaffolds for use in the erection or interior decoration or redecoration of buildings, and our object is to produce a scaffold which can be erected or knocked down with unskilled labor and in less time and with less danger to those engaged in erecting or dismantling the scaffold than with the usual type of scaffold.

Another object is to produce a scaffold adapted for use at any desired height, which may be increased in height as the walls of a building being erected necessitate such increase in the height of the scaffold, and from which when built to a predetermined height, the flooring may be removed and carried to another level to accommodate increase in the height of the walls of the building.

Another object is to produce a scaffold in which the parts are held together by clamping action and which embodies the desirable features of simplicity, strength, durability and cheapness in the assembling and dismantling operations, and a scaffold which may be used repeatedly without material deterioration.

With these general objects in view and others, as hereinafter appear, the invention consists in certain novel and peculiar features of construction and combinations of parts, as hereinafter described and claimed, and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1 is a fragmentary side elevation of a building wall and a scaffold embodying the invention.

Figure 2, is a horizontal section of the same.

Figure 3, is an enlarged central vertical section of one of the standards or uprights forming a part of the scaffold.

Figure 4 is a section on the line IV—IV of Figure 3.

Figure 5 is a section on the line V—V of Figure 3.

Figure 6, is a side elevation of an adjustable connection between one of the standards or uprights of the scaffold and the walls of the building being erected.

Figure 7, is a top view of the same.

Figure 8, is a fragmentary side view showing the means for securing one of the longitudinal stringers or one of the cross-ties of the scaffold to one of the standards or uprights.

Figure 9, is a plan view of the same.

Figure 10, is a side elevation showing the means whereby one of the standards or uprights of an interior scaffold is braced against the wall of the building at the point where no opening occurs in said wall.

Figure 11, is a top view of the construction shown by Figure 10.

Referring first to the scaffold generally and secondly to details of the same, 1 indicates the wall of a building shown in Figures 1 and 2 as in course of erection, 2 a window opening in the building, and arranged at suitable distances outward of the walls of the building and spaced equal distances apart, are an inner series of standards or uprights 3 and an outer series of standards or uprights 4. The standards or uprights 3 and 4 of each series are connected by longitudinal stringers 5 which are preferably of sufficient length to span the space between more than two of the standards or uprights. Similar longitudinal stringers 5 connect the standards or uprights 3 and 4 at the other sides of the building and occupy a plane approximately a foot or thereabouts higher than those of the first-named series of stringers, it being noted by reference to sheet 1 that only one set of each series of uprights and stringers is shown and that the extremities of one set of stringers overlie the extremities of the other set extending in a different direction at the corner of the building. Extending transversely across the parallel stringers of each set of stringers and against the inner and outer standards or uprights are cross ties 6, and laid upon the cross ties of each series and extending parallel with the respective stringers are flooring boards or planks 7 upon which the workmen may safely stand and move about in the course of their employment.

In the erection of the scaffold, it is de-

5 sirable that some of the standards or up-
rights shall be disposed outward of window
openings, one vertical series of which is
shown, and opposite some of the window
openings ties or anchors 8 will be secured
10 to the adjacent uprights and extend there-
from through said window openings and be
equipped with clamping levers 9 for en-
gagement with the building wall at the inner
and outer sides thereof. A comparatively
15 few of these ties or anchors will lend sta-
bility and rigidity to the scaffold by tend-
ing to maintain the uprights in parallel relation
with the walls of the building.

15 A set of stringers and cross ties will be ar-
ranged in superposed relation and prefera-
bly spaced five or six feet apart, though the
distance between one set of stringers and
cross ties and the set above the same may
20 of course be varied.

A building can be erected with only one
set of flooring boards for each side of the
building, though additional sets may be em-
ployed if desired. If only one set is em-
25 ployed, the workmen after building the wall
to a suitable height beyond the flooring, can
then remove the latter and place it upon the
next set of cross ties above, these actions
being repeated as the height of the walls
30 increase and of course reversed in removing
the scaffold, that is the flooring is lowered
from one series of cross ties to another in
effecting the dismantling of the scaffold.

Where a scaffold is erected in a large room
35 or auditorium to enable the same to be dec-
orated or redecorated, it may be possible
occasionally to run the ties or anchors 8 out
through the window openings and secure
the scaffold to the wall in a manner similar
40 to that described. If this is impracticable
due to the character of the walls of the room
or auditorium, brace rods 10 secured at one
end to selected standards or uprights, will
extend outward therefrom and be equipped
45 at their outer ends with shoes 11 to bear
against the adjacent walls.

Referring now to details of the scaffold
and first to sheet 2 of the drawings, it will
be seen that each standard 3 and 4 com-
50 prises a plurality of superposed members 12,
of gradually diminishing diameter by pref-
erence, as shown clearly by Figure 3, each
member being diametrically reduced near
its upper end at 13 to provide external
55 shoulders 14 and 15 and a socket 16 at its
upper extremity wherein is fitted the lower
end of the superposed member, this arrange-
ment permitting of the use of members of
different diameter, the bottom member being
60 of greatest diameter and the topmost mem-
ber of smallest diameter. This arrangement
is advantageous not only because it appor-
tions the strain scientifically and diminishes
the weight of the scaffold as a whole, but
65 also because it relieves the operators of labor

and facilitates the erection or dismantling
of the scaffold by the use of lighter standard
members as the scaffold increases in height.
Each standard member 12 is reduced in di-
10 ameter near its lower end to form a neck 17
and external shoulders 18 and 19 and the
lower end of the bottom member rests on a
base 20 and within a socket 21 thereof and
the upper end of said base is provided with
an external groove 22. The base may be
15 securely fastened to the ground in any suit-
able manner but preferably will be provided
with a broad foot plate 23 and radiating
ribs 24 to stiffen and strengthen it.

To reliably secure the lower member 12
20 to the base, a collar clamp is employed, the
same comprising two similar members 25
terminating at opposite ends in outwardly
projecting ears 26 secured together by clamp-
ing bolts 27 and nuts 28 or equivalent re-
25 taining devices. The upper halves of the
collar members are of the proper diameter
to tightly embrace the neck 17 of said mem-
ber 12 between the shoulders 18 and 19
thereof, and the internal diameter of the
30 lower halves of the collar members is en-
larged at 29 to receive the upper end of
the base 20 and there are provided internal
ribs 30 to fit in the external grooves 22 of
the base. This construction and arrange-
35 ment make it impossible for the said member
12 to move downwardly or upwardly.

Each member of a standard telescopes a
short distance into the member immediately
below it and the members so engaging are
40 secured firmly together by a clamp consist-
ing of a pair of collar members 31 terminat-
ing in ears 32 secured together by bolts 33
and nuts 34 or equivalent devices, said col-
lars fitting snugly around the enlarged upper
45 end of one of said standard members and
being diametrically reduced below said en-
largement to fit snugly around the reduced
or neck portion 13 and against the shoulders
14 and 15 of said member. 110

The upper ends of the collar members are
reduced to fit snugly around the neck por-
tion 17 and between the shoulders 18 and 19
of the other member 12, and in this connec-
50 tion it should be stated that the members 31
for the entire scaffold will preferably be of
the same size, but of such resiliency that the
pull of the fastening bolts and nuts shall
adapt or bend the said collar members suffi-
55 ciently to perform their function regardless.
within reasonable limits, of the diameter of
the standard to which they are fitted. By
thus making the collars of a single size the
cost of the scaffold as a whole is reduced and
60 there will be no necessity for selecting par-
ticular collar clamps to fit particular stand-
ards, which of course would delay the erec-
tion of the scaffold. 125

For supporting the stringers and cross
ties and securing said elements firmly in 130

place, clamps of the following construction are secured to each standard or upright: Each clamp comprises a pair of half collars 35 provided at their opposite ends with ears 5 36 and 37, the ears 37 being spaced more widely apart than the ears 36 and forming one of the underlying supports or rests for a stringer or cross tie, each set of ears being connected together by a pair of bolts 38 and a pair of nuts 39. Pivoted on the uppermost 10 pair of bolts connecting ears 37, is an eye-bolt 40 and fitting at opposite sides of said eye-bolt are two short bars 41 constituting a lever pivoted at its lower end on the under- 15 most of the bolts 38 connecting ears 37, it being noted that the lower ends of the bars 41 curve inwardly so that the upper or straight portions of the bars may project vertically upward beyond the outer ends of the ears 37 and the outer side of the stringer or cross tie resting on said ears, and secured 20 to the said lever between the upper ends of the members 41 thereof, is a prong 42 to clamp the stringer or cross tie firmly against the adjacent standard, the prong being adapted for embedment in the stringer or tie to guard against longitudinal movement or slippage thereof.

To apply the force on said lever necessary to clamp the stringer or cross tie in 30 place and embed the prong therein as explained, the pivot bolt 40 extends outward between the bars or members of said lever and is engaged by a washer 43 and a clamping nut 44, the screwing home of the nut on the bolt causing the washer which bears against the outer edges of the members 41, to apply inward pressure thereon for the purpose explained. It will be understood 40 that the collar members of the clamps last above described, are of such construction that they can be fitted upon the standards at any point thereon, that is upon any member 12 thereof, thus avoiding the necessity 45 of making such collars of different sizes to fit different diameters.

If desired the scaffold may be so constructed that the cross ties shall rest directly on the stringers. In this event the collars 50 of the two clamps for securing the stringer and cross tie in position will be arranged in superposed relation below the stringer, the lever of the clamp for the cross tie extending upward sufficiently to engage said cross tie and the lever of the other clamp extending upward past the first-named clamp and engaging the stringer. The constructions of the clamp in both cases will be identical except as regards the length of the lever element. The construction shown, however, is the preferred construction as it gives greater leverage for clamping the stringer or cross tie in place and of course incidentally possesses greater strength.

65 The tie or anchor for connecting the

scaffold with the wall of a building, preferably consists of a pair of bars 45, spaced slightly apart and provided with oppositely bowed collar portions 46 to be clamped upon the adjacent standard or upright 3 by bolts 70 47 and nuts 48, the bars extending through the window opening and preferably resting on the wall and provided with a longitudinal series of openings 49. A pair of shoes 50 joined together at the lower edges rest on 75 the bars 45 and are provided with depending perforated portions 51 fitting between said bars, the parts 50 and 51 constituting a Y-shaped member in vertical section. Bolts 52 extend through said perforations of the 80 bars and depending portions 51, and nuts 53 engage the bolts, to secure the shoes firmly and rigidly to the bars. The bolts and nuts also secure against the outer sides of said bars and shoes, levers 9, consisting of 85 two-part members and pivoted to the upper ends of said levers at 55 are bolts 56 which extend through the upper portions of their respective shoes and are engaged by clamping nuts 57 and washers 58, the 90 screwing home of the nuts causing the washers to bear against edges of the shoes and thus cause the lower ends of the levers to clamp firmly the wall, as shown clearly in Figure 6. 95

In the construction shown by Figures 10 and 11 for bracing the scaffold within a building, collars comprising two-part flanged members 59 are fitted upon the standards, 100 and extending through the flanged ends or ears of the collar members are brace rods 10, having eyes 60, the eye of each rod being pivoted on a bolt 61 which extends through a pair of angle plates 62 and is engaged by a retaining nut 63. The angle plates 105 are rigidly secured to a shoe 11 of the type hereinbefore referred to, this shoe through the proper manipulation of nuts 64 and 65 being brought to bear firmly against the wall of the building. After this adjustment 110 is effected, the nuts 65 are turned to effect greater clamping action of the collar members 59 on the standards so that there shall be no chance of the anchor or brace sliding downward. 115

In Figure 1, it will be seen that a pair of adjacent standards or uprights are connected by cross rods 66 retained in place by nuts 67, these cross rods and said standards constituting a ladder whereby the 120 workmen can ascend or descend the scaffold.

From the above description it will be apparent that we have produced a knock down scaffold embodying the features of 125 advantage enumerated as desirable in the statement of the object of the invention, and while we have illustrated and described the preferred embodiments of the invention, it is to be understood that we reserve the right 130

to make all changes properly falling within the spirit and scope of the appended claims.

We claim:

1. The combination of a collar, a lever
5 thereon provided with prongs, a bolt pivoted to the collar, and a nut engaging the bolt and lever to effect operation of the latter in the direction in which the prongs thereof project.
- 10 2. The combination with a standard, of a bar projecting laterally therefrom, a shoe secured to the bar, clamp levers on the bar, and means for causing the levers to approach for cooperative clamping action on
15 an interposed object.
3. In a knock-down scaffold a base provided with an external groove and upwardly-opening socket, a standard fitting in said socket and resting upon said base and provided with an externally reduced portion
20 above the base, and a clamp consisting of two parts secured together and upon the base, and lower part of the standard, the upper halves of said parts fitting snugly in the reduced portion of the standard and the 25 lower halves of said parts having ribs fitting snugly in the groove of said base.
4. In a knock-down scaffold, superposed standards fitting telescopically together, the lower one supporting the upper one, and 30 provided, near its upper end, with a diametrically reduced portion, the upper standard at a point above the lower standard also having a diametrically reduced portion, and a clamp for securing the two standards 35 together, said clamp comprising two members receiving the upper end of the lower standard and the lower end of the upper standard between them and snugly engaging the reduced portions of said standards, 40 and means for drawing and holding said members firmly against the standards.

In witness whereof we hereunto affix our signatures.

FOKKO H. G. BRANDT.
GEORGE K. KRELL.