PATENT SPECIFICATION

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Application Date (in United Kingdom): Feb. 10, 1931. No. 4140/31.

Complete Accepted: Dec. 24, 1931.

COMPLETE SPECIFICATION.

Toy Construction Sets.

We, VEREINIGTE SPIELWAREN-FABRIKEN ANDREAS FÖRTNER & J. HAFFNER'S NACHFOLGER GESELLSCHAFT MIT BESCHRAENKTER HAFTUNG, of 15, Kobergerstrasse, Nuremburg, Germany, a Company registered under the Laws of Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Structural members, stamped out of flat metal strips, for mechanical toy construction sets are already known in numerous forms especially longitudinal members with recesses imitating the latticework of full sized structures and provided with two rows of circular holes disposed in such a manner that two of the sides of the square formed by four holes lie parallel with the longitudinal axis of the strip, whilst the outer sides are at right angles thereto. Long and narrow frame strips with two rows of adjacently disposed holes are also known, also comparatively wide flat strip lattice-like girders are known in which triangular and square gaps are provided in addition to two outer rows of closely spaced holes and a row of widely spaced holes situated centrally between the square gaps.

The chief feature of the present invention consists in providing flat strips and bent structural members made of such flat strips having holes of only one shape and size, which are formed as three rows of circular holes of equal diameter, and, which are offset in relation to each other.

Practical experiments have shown that with an arrangement of rows of holes with relatively offset holes not only is the cost of production lowered, but also the range of application of the structural members is considerably increased, the size and shape of the holes may be restricted to one pattern, and at the same time the material can be utilised to far greater advantage than heretofore, notwithstanding the saving in weight. The relative position of the holes stamped in the three rows, running parallel with the longitudinal axis of the strip, is such that the diagonals of the squares formed by each four adjacent holes run parallel with, or at right angles to the longitudinal axis of the strip.

Such offset rows of holes require a considerably smaller width of strip than when the holes are arranged in the known manner already mentioned. The advantage of the offset rows of holes becomes still more apparent when the distance between the edges of two holes measured in the vertical or longitudinal direction is reduced to the dimensions of the diameter of a hole. In such case, the offset disposition of the rows of holes becomes technically practicable, whereas the juxtaposition of three rows of holes without offsetting would be quite impossible in the case of the narrower strip which the new arrangement provides, inasmuch as the holes would overlap one another. The unusually large number of holes per unit of surface also affords increased possibilities of connecting the several members together than is the case with the wider perforated metal strips hitherto known.

The improved utilisation of the material is accompanied not only by a considerable saving in weight, but also by a more slender shape of the longitudinal members of the construction set, as compared with the known strips having a plurality of rows of perforations. The reduction of the total cost of production of the construction set, follows from the fact that, apart from the usual auxiliary members, nothing is required beyond uniformly perforated metal strips, plates or channel members formed therefrom, together with screws having slotted heads and nuts as connecting members.

The invention will be clearly understood from the following description aided by the annexed drawings in which several structural members according to the invention, and toy models constructed therewith are illustrated and in which Figures 1, 2 and 3 represent structural strips of different lengths in plan and side elevation. Figure 1a shows in plan one end of a strip of the pattern hitherto known. Figure 4 shows a strip bent in the form of a channel in plan, side elevation and end

elevation. Figure 5 shows a toy model of a hoist constructed with structural members according to Figures 1—4 and the usual members. Figures 6 and 7 represent other embodiments of structural members and Figures 8, 9 and 10 represent in side elevation, plan and perspective other toy models constructed with the aid of structural members in accordance with the invention and matchbox.

According to Figures 1, 2 and 3, the structural members stamped out of sheet metal consist of a sheet metal strip 1, of varying length, provided with three adjacently disposed rows of holes 2, 3 and 4, said holes in the three rows being so distributed on the strip that the diagonals of the squares formed by four adjacent holes run parallel with, or at right angles to the longitudinal axis of the strip. Each hole in the middle row lies between two holes in the two outer rows. The strips according to Figures 1—3 are rounded at the ends and have a hole of the middle row within the rounded area at each end. As shown in Figure 6, however, the strip 1 may have straight ends cut off square, or the ends may be cut off at an angle of 45°, for example, in order to form good butt joints in assembling lattice work and more particularly to prevent an overhanging structural member from turning when merely secured by a screw at one end.

The channel members according to Figure 4 have an internal dimension of about $1^3/_8$ths of an inch, and serve as connections and struts between two strips (Figure 5) or, in constructing truck frames (Figures 8, 9 and 10) as end members and bearings for the truck body formed by a matchbox 5.

With the aid of a few of such structural members, all of them formed of same material and on the same system, together with the assistance of universally available articles such as cotton reels, matchboxes and the like, and with a few fittings such as axles, wheels, rollers, cranks, screws, etc., it is possible to construct toy models which in the case of the sets hitherto known, required the employment of far more expensive structural members.

The members needed for constructing simple toy models are packed in flat cartons and can be put on the market at a modest price, as an exceedingly cheap toy.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. Strip structural members for toy construction sets, characterised by flat strips and bent structural members made of such flat strips having holes of only one shape and size, which are formed as three relatively offset rows of circular holes of equal diameter, substantially as set forth.

2. Strip structural member according to Claim 1 characterised in that the rows of holes are disposed in such a manner that the diagonals of the squares formed by four adjacent holes run parallel with or at right angles to the longitudinal axis of the strip.

3. Strip structural member according to Claims 1 and 2, characterised by a form of strip which is either rounded or cut off straight at both ends (Figures 1 and 6).

4. Strip structural member according to Claim 1, characterised by its channel shape according to Figure 4.

Dated this 10th day of February, 1931.

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Agents for the said Applicants.

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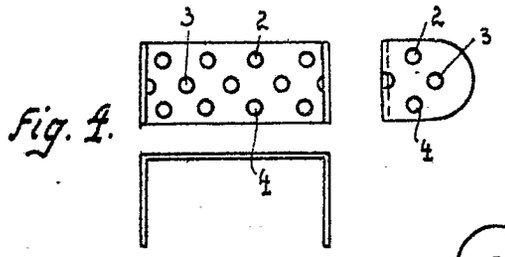


Fig. 4.

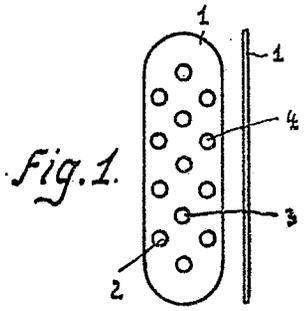


Fig. 1.

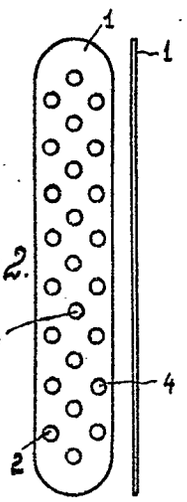


Fig. 2.

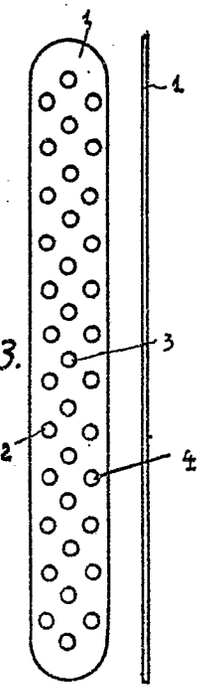


Fig. 3.

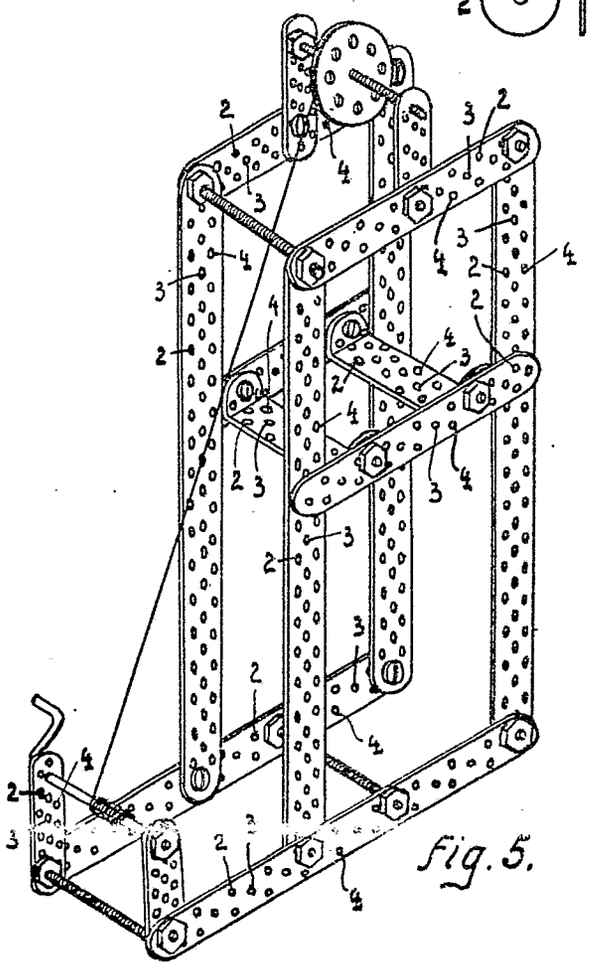


Fig. 5.

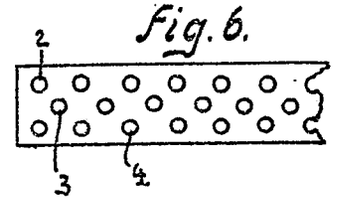


Fig. 6.

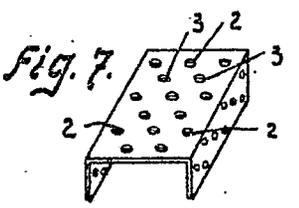


Fig. 7.

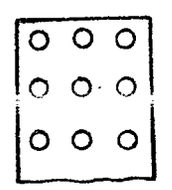
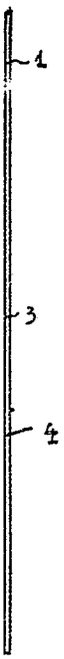


Fig. 1a.



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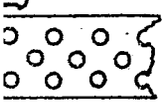


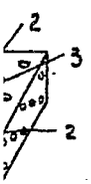


Fig. 1a.

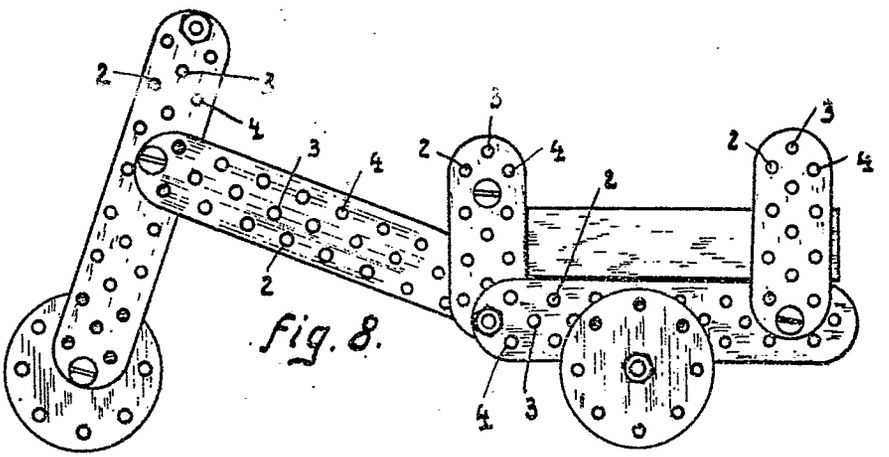
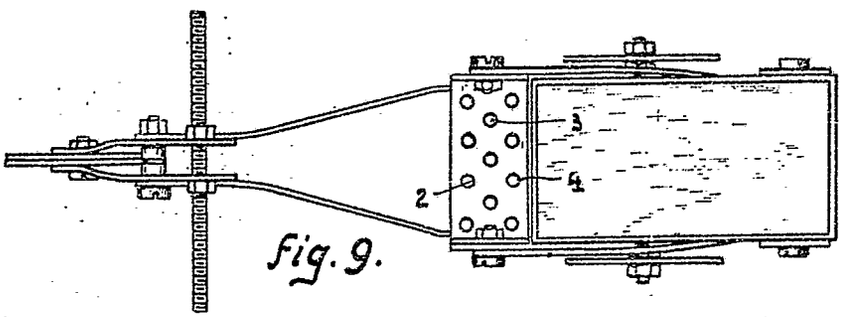


Fig. 8.



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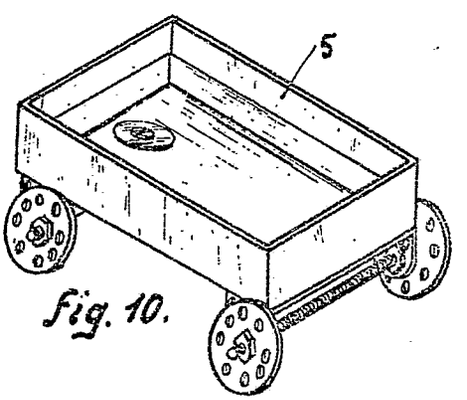

Fig. 10.

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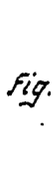
[This Drawing is a reproduction of the Original on a reduced scale.]



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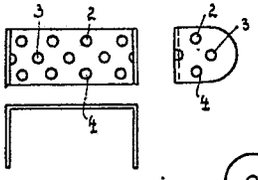


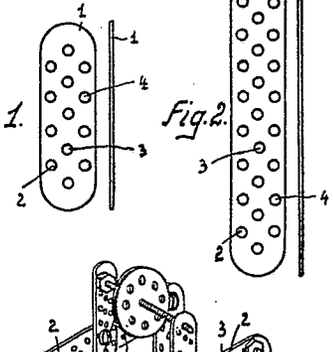
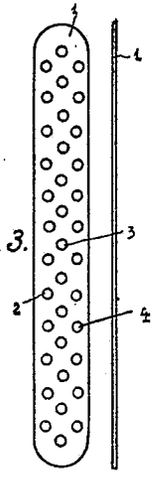


Fig. 1.

Fig. 2.



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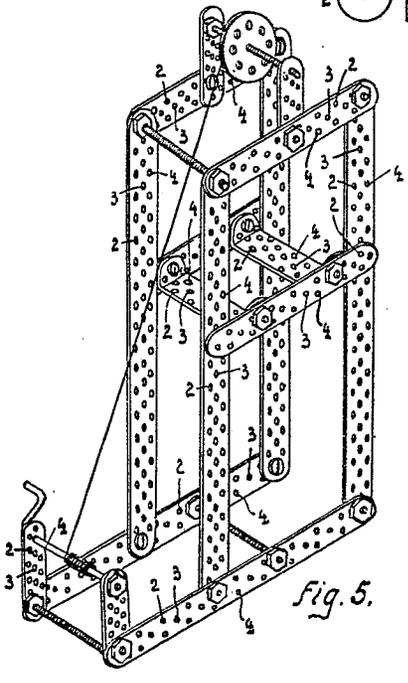

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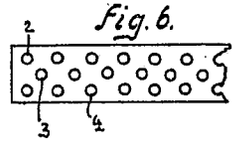

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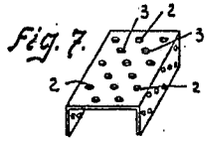

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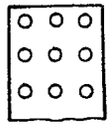
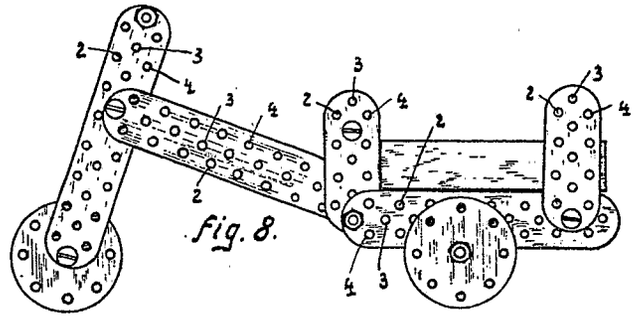


Fig. 1a.



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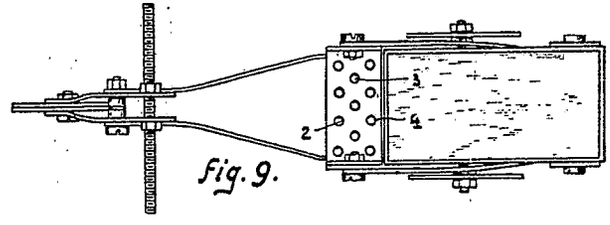

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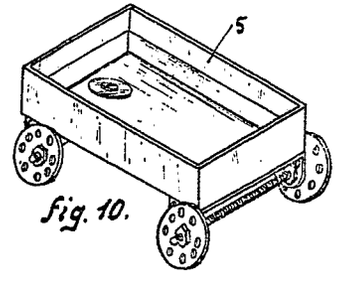

Fig. 10.

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