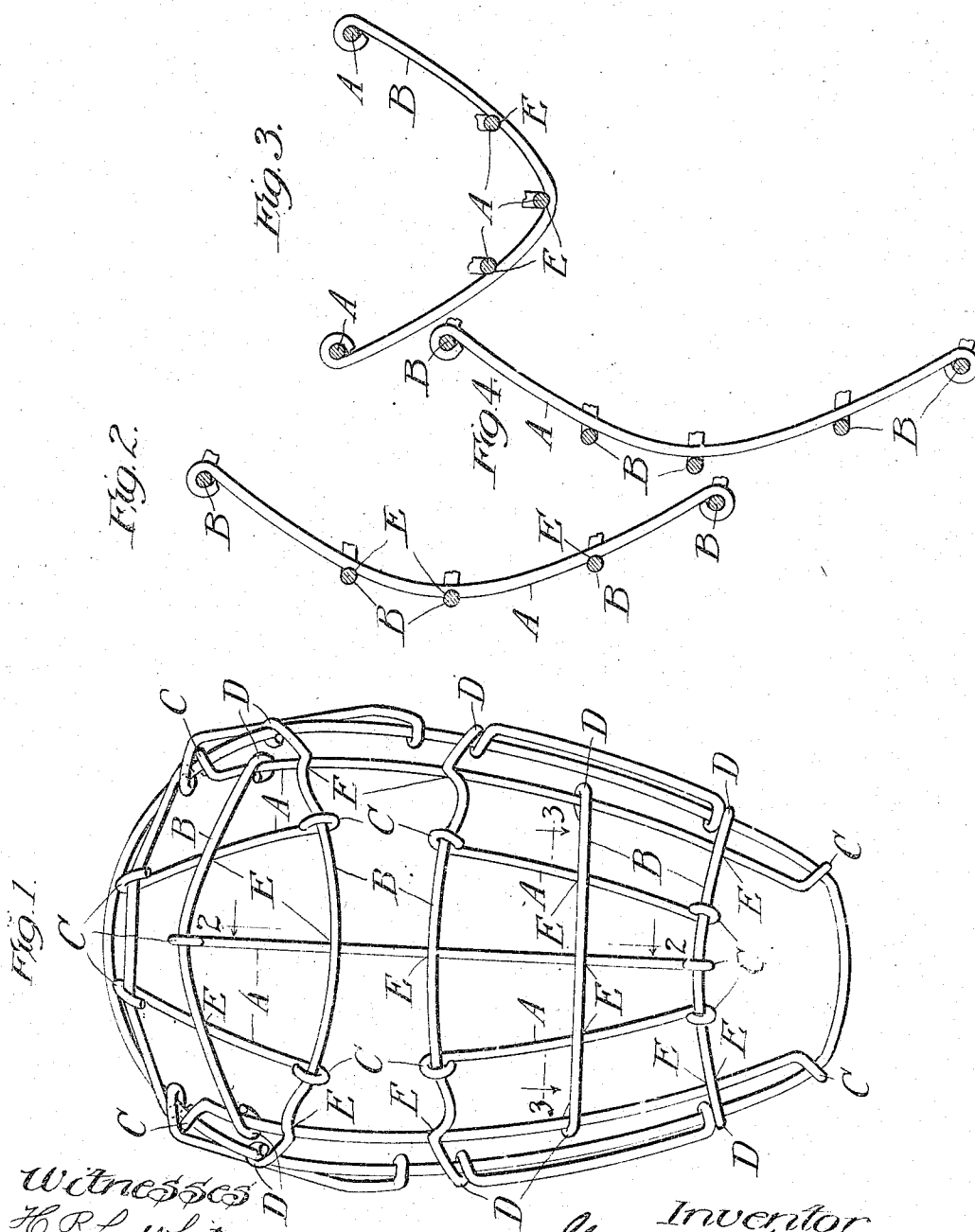


933,342.

G. K. RIX.
METHOD OF MAKING WIRE FRAMES.
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Patented Sept. 7, 1909.



Witnesses
H. R. L. White
R. A. White.

Inventor
George K. Rix
By *Charles H. Rix* Att'y

UNITED STATES PATENT OFFICE.

GEORGE K. RIX, OF CHICAGO, ILLINOIS, ASSIGNOR TO BARBEE WIRE & IRON WORKS,
OF LA FAYETTE, INDIANA, A CORPORATION OF INDIANA.

METHOD OF MAKING WIRE FRAMES.

933,342.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE K. RIX, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of Making Wire Frames; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a novel method of making concavo-convex wire frames, the object being to provide a method whereby said frames are made more durable and resilient, lighter, neater in appearance, and cheaper than heretofore, and are rendered devoid of sharp projections and by which certain characteristics are imparted to said frames.

The invention consists in the novel features of the method hereinafter fully described and claimed.

In the accompanying drawings illustrating my invention: Figure 1 is a front elevation of a base-ball mask exemplifying a concavo-convex wire frame constructed in accordance with my method. Figs. 2 and 3 are respectively fragmentary detail longitudinal and transverse sections of the same on the lines 2-2 and 3-3 of Fig. 1. Fig. 4 is a view similar to Fig. 2 showing the wires in their relative positions before welding.

My invention relates more particularly to that class of wire frames which are made of very heavy wire in comparison with the dimensions of the device and which are very admirably exemplified in the base-ball mask. These frames or masks which are relatively small are made of steel wire of about three-sixteenths inch diameter and which, owing to the relatively small dimensions of the device are relatively very short and for this reason very stiff and unyielding. Owing to the short lengths and stiffness of the wires composing the mask, the same must be bent to proper contour before being incorporated in the structure and in order to secure the same the ends of the wires extending in one direction are looped around transversely extending wires and said loops are then contracted so as to secure as tight a hold as possible. Slippage of the joints thus effected is unavoidable as is also the swinging of the wires thus secured, the latter being arched

between their ends. Each of said wires passes over or under a number of arched transversely disposed wires and at the points where said wires cross each other various means for joining the same have been resorted to, such as soldering, attaching X-shaped clips, and winding finer wire around the same. None of these means has, however, proved efficient for the reason that these masks are subjected to very rough handling and very hard blows. Hence, displacement of the arched wires could not be avoided. Furthermore, the above-mentioned expedients caused very sharp projections to be formed at these joints which frequently caused severe scratches of the hands of the players and the ripping of covers of baseballs striking the mask, and also rendered the joints large and thereby interfered to some extent with the wearer's sight.

My present invention consists in first building the mask or any other concavo-convex wire frame in the usual manner, the number, shape and relative disposition of all wires being exactly the same as ordinarily and thereafter welding together the wires crossing each other between their ends.

I am aware that it is common practice to weld cross-wires together and I desire, therefore, to render clear that I do not claim the welding operation in itself as a feature of my invention and invite particular attention to the following statement.

So far as I am informed the welding of cross-wires or bars has heretofore been effected only as a primary step in the construction of wire fences in particular and possibly in other structures but such structures were bent to shape after the welding operation had been completed. That is to say, in the manufacture of welded wire fences, straight wires are employed, the fencing when completed being rolled. I know of no welded structure having a spherical or oval concavo-convex shape in whole or in part aside from the subject-matter of this application.

The cross-wires of a welded fence are merely disposed in guides to properly position them relatively to each other, while in the mask illustrated the wires are firmly secured at their ends and their positions thus firmly fixed with relation to each other before welding. In welding these wires together, therefore, it becomes necessary to

force them together a distance substantially equal to the diameter of the wire so that each wire sinks one-half its diameter into the other. Thus the inner arched wires, which may be said to lie in the concave face of the frame, are subjected to a relatively high tensile stress while the outer arched wires are subjected to a similar compression stress in effecting the welding together thereof at their points of intersection. These stresses are transmitted partially to the wires to which said welded wires are secured at their ends but remain partially ever-present in the wires joined especially between adjacent welded joints. This is due partially to the expansion of the wires by heating preparatory to welding and their subsequent contraction. The structure thereby has imparted to it a characteristic which is impossible of accomplishment in any other manner. The joining together of the wires by welding would of itself greatly strengthen the structure but by reason of the primary anchorage of the wires at their ends, the stiffening effect of the welding is greatly enhanced and the entire structure has imparted to it an inherent tension which will cause it to ring when struck by a hard substance. As each wire so welded to another reinforces the latter, I am enabled to produce a mask of lighter wire possessing greater strength than the present masks of heavier wire. The welding is preferably effected electrically or in any other well-known manner adapted to the purpose.

In the drawings illustrating a base-ball mask as exemplifying a concavo-convex wire frame embodying my invention and constituting a product of my method or process, the arched longitudinal wires A are disposed inwardly of the arched transverse wires B, said respective wires being disposed respectively on the concave and convex faces of the frame. The loops C and D at the ends of said wires are first inserted over and contracted upon the wires engaged thereby and after completion of the structure the said wires A and B are welded together at each of the crossing points E. While it is preferable to first weld the same together at the points most nearly midway between the ends of both and subsequently weld the joints in their order of position nearer the edge portions of the frame, it is not essential that this order should be strictly adhered to.

I claim as my invention:

1. The hereindescribed method of making concavo-convex frames which consists in first making the complete frame having its relatively transversely disposed arched wires

anchored at their terminals, and subsequently compressing together the relatively transversely disposed wires at their points of intersection between their ends in the presence of a welding heat and shrinking them into each other, whereby an inherent stress is imparted to each wire, substantially as and for the purpose specified.

2. The hereindescribed method of making concavo-convex frames which consists in first permanently fixing in its proper position each wire composing said frame whereby a completed structure is produced, and subsequently compressing together in the presence of welding temperature the relatively transversely disposed wires at their points of intersection between their ends and shrinking them into each other, whereby an inherent stress is imparted to each wire, substantially as and for the purpose specified.

3. The hereindescribed method of making concavo-convex wire frames which consists in first making the complete frame having the relatively transversely disposed arched wires composing the same anchored at their terminals and permanently fixed in relative positions, and in subsequently compressing said relatively transversely disposed wires together at points of intersection in the presence of welding heat and shrinking them partially into each other, whereby all slack in the said wires is taken up and inherent tension and compression stresses are imparted thereto.

4. The hereindescribed method of making concavo-convex wire frames which consists in first making the complete frame having the relatively transversely disposed arched wires composing the same anchored at their terminals and permanently fixed in relative positions, one set of said wires being disposed on the convex face and the other on the concave face of said frame, and in subsequently compressing said relatively transversely disposed wires together at points of intersection in the presence of welding heat and shrinking them partially into each other, whereby all slack in said wires is taken up and inherent tension stresses imparted to the wires on the concave face of said frame and inherent compression stresses are imparted to the wires on the convex face of the frame.

In testimony whereof I have signed my name in the presence of two subscribing witnesses.

GEORGE K

Witnesses:

G. A. JOHNSON,
FRANK M. CARY.