

(No Model.)

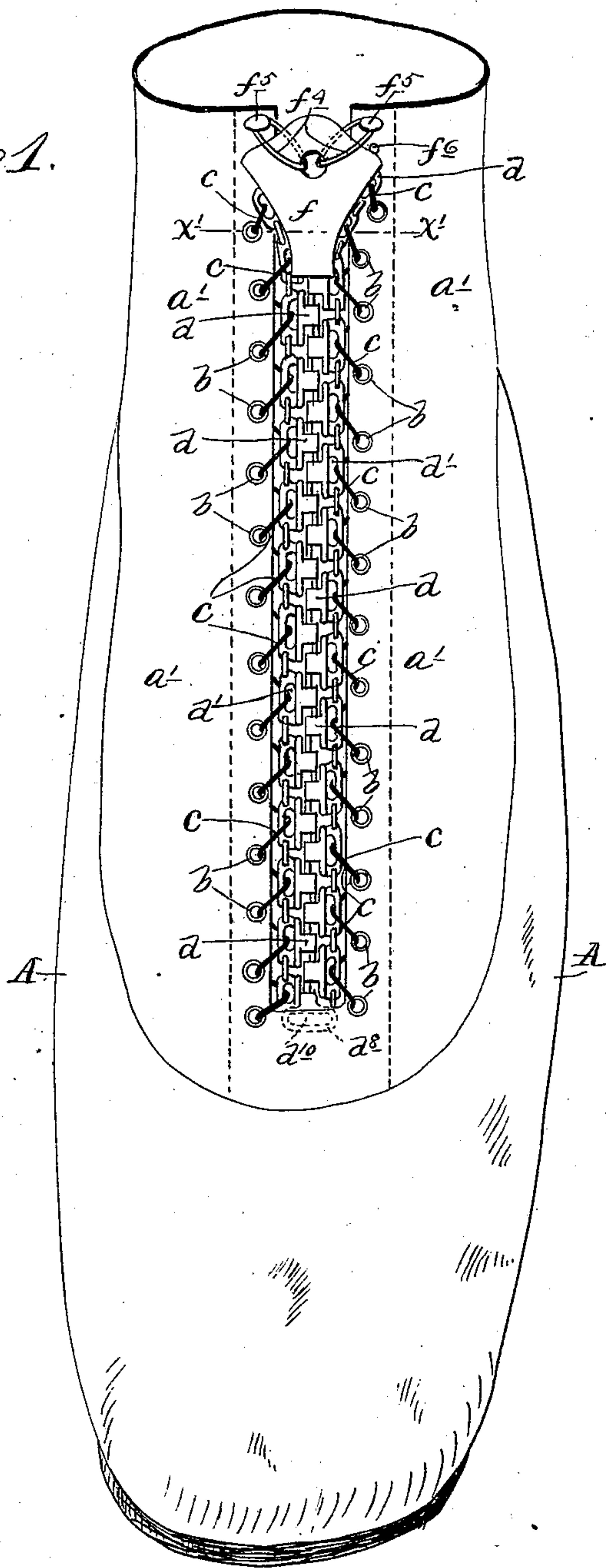
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W. L. JUDSON.
FASTENING FOR SHOES.

No. 557,207.

Patented Mar. 31, 1896.

Fig 1.



Witnesses.

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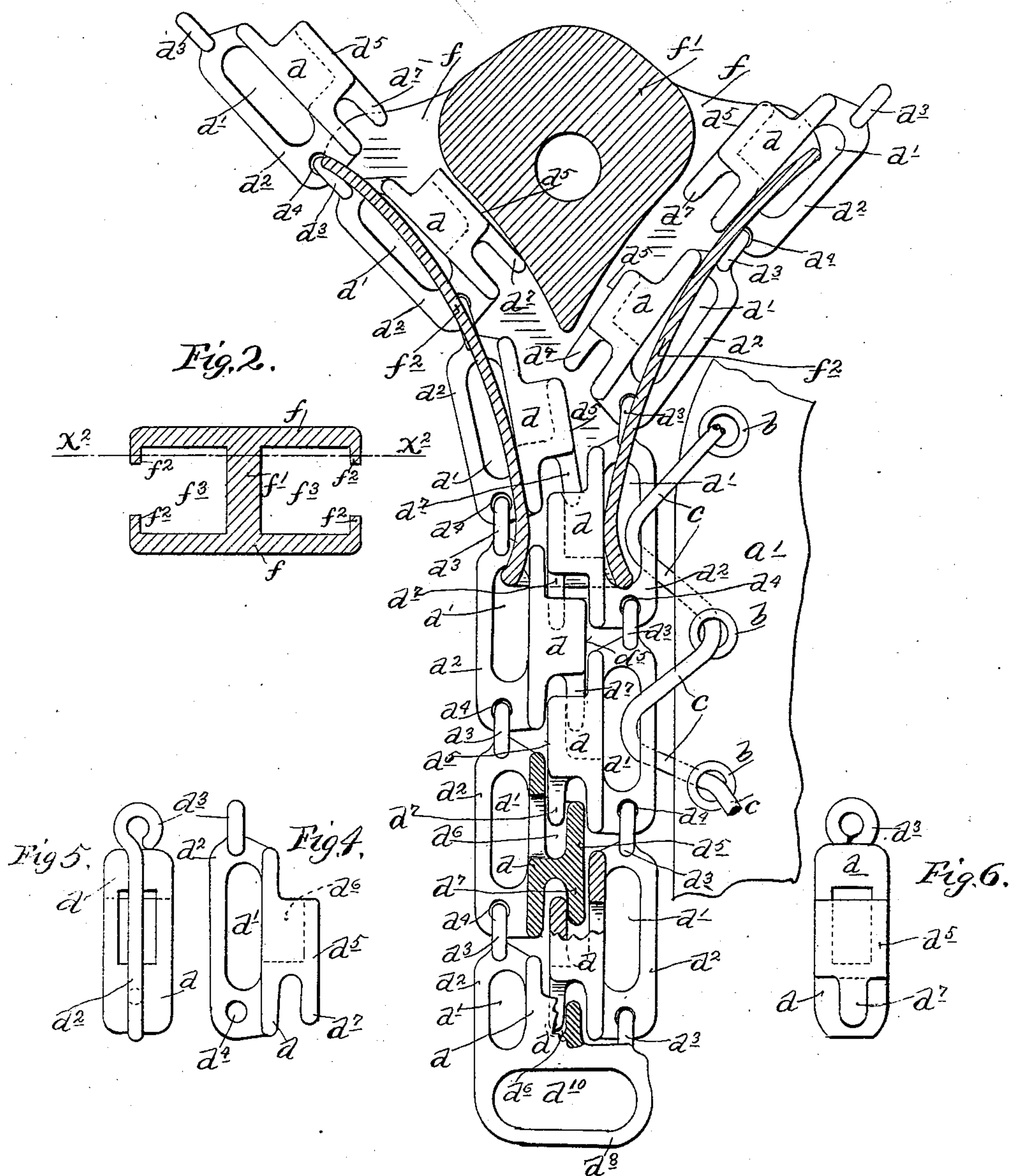
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Fig. 3.



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(No Model.)

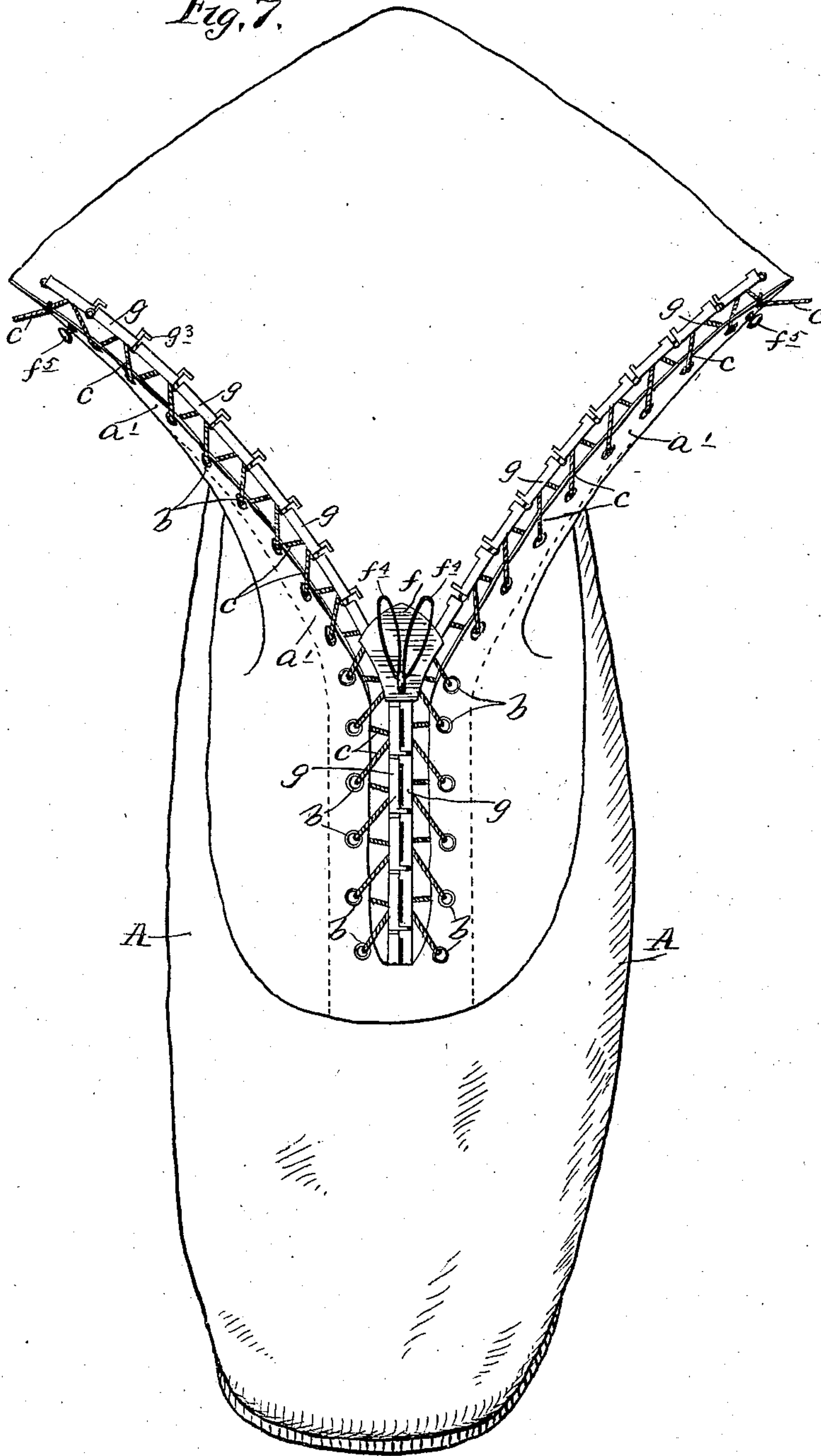
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Fig. 7.



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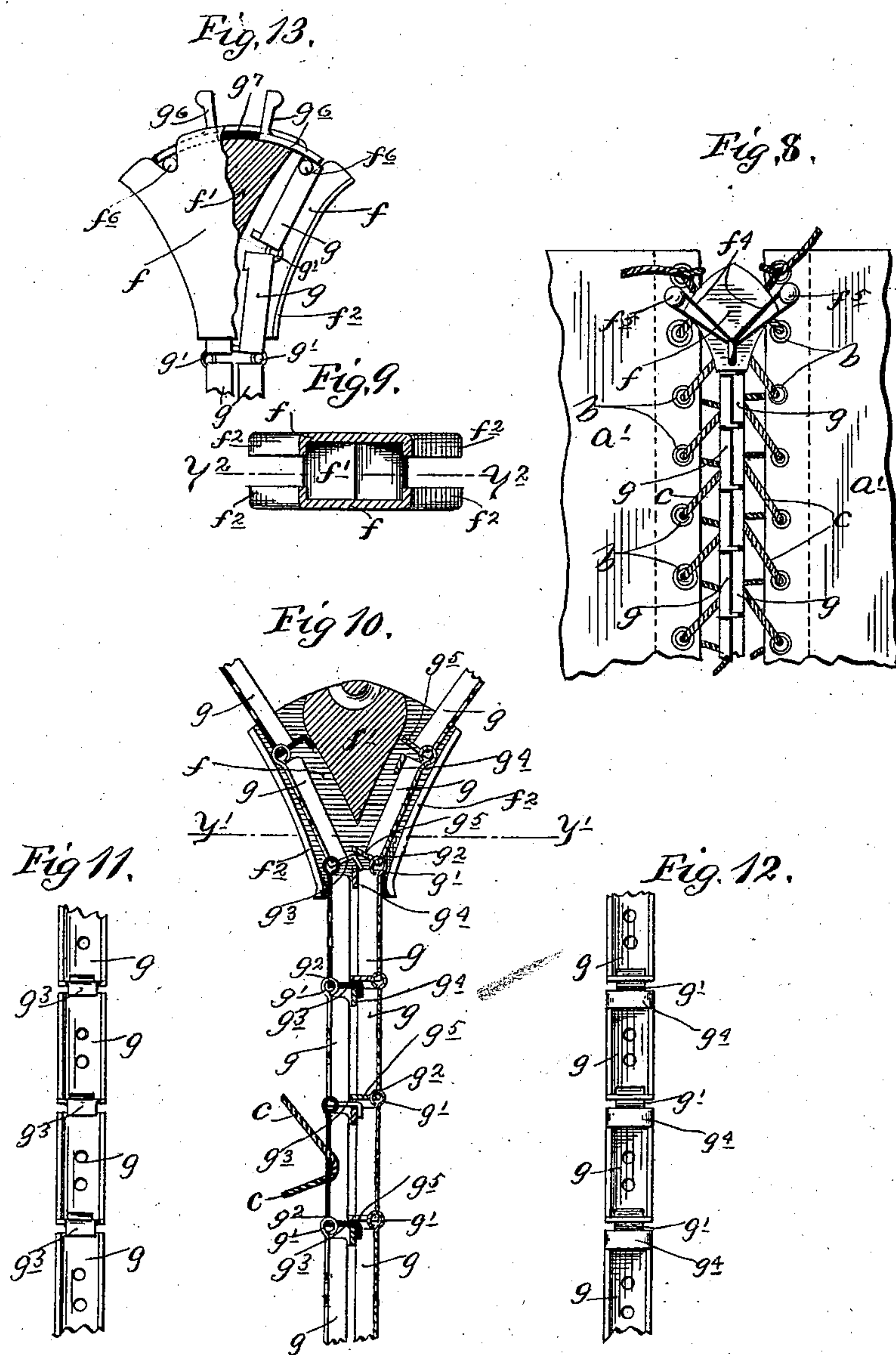
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UNITED STATES PATENT OFFICE.

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FASTENING FOR SHOES.

SPECIFICATION forming part of Letters Patent No. 557,207, dated March 31, 1896.

Application filed October 2, 1894. Serial No. 524,733. (No model.)

To all whom it may concern:

Be it known that I, WHITCOMB L. JUDSON, 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 Fastenings for Shoes, &c.; 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.

My invention has for its object to provide a convenient device for detachably connecting the flaps of shoes or other articles.

To this end my invention consists in the novel elements and the novel combinations of elements hereinafter fully described, and defined in the claims.

Some of the features of construction herein disclosed are within the scope of the generic claims contained in my former patents, issued to me of date August 29, 1893, and numbered, respectively, 504,037 and 504,038, and some of the features disclosed herein are also disclosed and specifically claimed in my companion application, filed of even date, under Serial No. 524,734.

My invention is illustrated in the accompanying drawings, wherein, like letters referring to like parts—

Figure 1 is a perspective view looking from the front of a shoe having the preferred form of my invention applied thereto with the flaps of the shoe in their closed position. Fig. 2 is a vertical cross-section of the slider on the line X' X' of Fig. 1. Fig. 3 is a longitudinal section of the slider on the line X² X² of Fig. 2, with the chains and some of the other parts shown in plan view with some portions broken away. Fig. 4 is a plan view of one of the links of the coupling-chains detached. Fig. 5 is an outside elevation or back view of the same, and Fig. 6 is an inside elevation or face view of the same. As shown in Fig. 1, all the parts are of exact full size. As shown in Figs. 2, 3, 4, 5, and 6, the parts are magnified on a scale of four to one as compared with the working sizes. Fig. 7 is a perspective view of a shoe, looking from the front, showing a modified form of my invention wherein a dif-

ferent species of chain is employed with the flaps of the shoe in their partly-opened position. Figs. 8 to 13, inclusive, are details illustrating the construction shown in Fig. 7. Of the said details, Fig. 8 is a plan view showing the chains in their coupled position with the flaps closed and the slider secured in its uppermost position, some parts being broken away. Fig. 9 is a cross-section of the slider detached on the line Y' Y' of Fig. 10. Fig. 10 is a longitudinal section of the slider and coupling-chains on the line Y² Y² of Fig. 9 in respect to the slider when in position on the chains. Figs. 11 and 12 are plan views of several of the male and female links laid down flatwise with their inner faces upward, Fig. 11 showing the male links and Fig. 12 the female links. Fig. 13 is a plan view with some parts broken away, showing a modification in the form of the fastening device for securing the slider in its uppermost position.

Let attention first be given to the preferred construction, as shown in Figs. 1 to 6, inclusive.

A represents the body of the shoe, and a' represents the flat portions of the same, which are provided with ordinary eyelets b. Lacing-strings c adjustably connect to the said flaps a series of links d, the said strings passing through the eyelets b in the flaps and elongated eyelet-openings d' in what may be called the "wings" d² of the said links. The links of the said chains are pivotally connected at their ends, the joints being formed by hook-like projections d³ on the upper end of the wing portion of each link and an eye d⁴ on the lower end of the wing portion of each link. The part d³ of one link engages the eye d⁴ of the next adjacent link, thus forming a joint which will permit an endwise pivotal motion of the links of each chain in respect to each other. The wing portion d² of each link is reduced or made comparatively thin as compared with the body portion d and is central with respect to the body portion, which affords a shoulder or flange on each side at the point of junction between the wing and the body of each link. On the body portion of each link is formed an inwardly-projecting coupling part d⁵, which faces the links of the opposite chain. The

coupling part d^5 of each link is provided with a socket d^6 in its upper end and a pintle d^7 at its lower end. The links of the two chains, with the exception of the crotch or junction link, are exactly alike in construction; but when the chains are in working position the coupling parts d^5 of the two chains stand in the relation of rights and lefts, as clearly shown in Fig. 3. Otherwise stated, each link of each chain is provided both with a male and female coupling part, and when the chains are coupled together the female part of each link on one chain is engaged by the male part of a link on the other chain. The joints formed by the parts d^2 d^3 connecting the links of the respective chains do not stand opposite each other when the chains are in working position, but are staggered. The crotch or junction link which connects the two chains is essentially like the other links, with the exception that it has added thereto a part d^8 with an elongated eyelet d^{10} , adapting the same to be sewed or otherwise permanently fastened to the shoe at the crotch or junction of the flaps. The said junction-link has two of the parts d^3 , one for engaging the adjacent link of each of the two chains. The links of the chains, as shown in Figs. 1, 3, 4, 5, and 6, are made of some malleable material, such as brass or malleable-iron castings, and hence the parts d^3 may be closed after entering the same through the eyes d^2 . This fact that the links can be cast and that only two patterns are required for both chains renders it possible to produce these chains at an extremely low cost.

Having regard to the action of the parts so far described, it must be obvious that the links may be coupled together by beginning with the lowermost facing pair and turning them endwise together on their joints. Otherwise stated, as the pairs of links are turned together in succession the pintles d^7 of the link on one chain will enter the socket d^6 of a link on the opposite chain and each set of coupled parts will be locked in their coupled position by the next adjacent headward link of the chains. Hence when the links have thus been coupled together, which might be done by hand if the head links of the two chains be fastened in their coupled position, the chains will be connected throughout and cannot be separated by strain in any direction; but if the head links of the said coupled chains be unfastened the two chains may be separated with an instantaneous action by pulling the same apart in the same way as one would tear apart two pieces of cloth or paper. Hence it is obvious that the flaps of a shoe or other article can with the use of coupling-chains of this sort be opened with an extremely quick action.

To couple the links of the chain by hand, as above assumed, would, however, be comparatively tedious. Hence to accomplish the coupling action of the links and to hold the head links in their coupled position, I have provided a cam-action slider which is

somewhat similar to the locker and unlocker shown in my prior patents, but which in this combination operates with a somewhat different action involving an automatic movement of the slider backward in the uncoupling action of the chains, and which slider is in this case designed to remain permanently on the shoe. This slider will be readily understood by reference to Figs. 1, 2, and 3, where it is shown as a casting, and by reference to Figs. 7, 8, 9, 10, and 13, where it is shown as struck up from separate plates of sheet metal. In shape the slider is somewhat similar to the frustum of a cone, and consists, essentially, of upper and lower expanded portions, which may be conveniently called "top" and "bottom" plates f , an angular block f' connecting the two plates f with its angle downward, and facing marginal flanges f^2 projecting from the two plates f , which parts co-operate to form cam-channels f^3 , which diverge throughout their upper portions from the point or angle of the block f' and are common or open to each other throughout their lower portions, or in the parts of the same below the point of said angle-block f' , and which are open at their sides between the marginal flanges f^2 of the slider. Both the upper and lower ends of the cam-channels are bell-mouthed. Supposing the chains to have been coupled together, but the head links of the same unfastened, the slider may be placed in working position by entering the head links of the chains at the lower end of the cam-channels and passing the same outward therethrough at the top of the slider. Supposing the slider to be in working position on the chains and to be at its lowermost point—to wit, at the crotch or junction of the two chains—the links may be coupled by simply taking hold of the slider and drawing the same to its uppermost limit on the chains. The camming action of the slider in its upward movement on the chains will force the coupling parts of the links of the two chains into their coupled position, as will be readily understood from an inspection of Figs. 3 and 10 of the drawings. For a convenience in pulling upward the slider and for fastening the same in its uppermost position it is shown in Fig. 1 as provided with a pair of flexible loops f^4 , which serve as a finger-pull in drawing upward the slider, and when the slider is in its uppermost position it may be made to engage with a pair of hook-like buttons f^5 , fixed to the upper ends of the shoe-flaps. Supposing the parts to be in the position as shown in Fig. 1, all that is necessary to open the flaps is to disengage the loops f^4 from the hooks f^5 , so as to unfasten or unlock the head links of the chains, and then to pull apart the two chains or the flaps of the shoe from some point above the slider. The pulling apart of the chains will uncouple the links, as hitherto noted, and the backs of the links of the chains will act on the slider with a camming action and will thereby force the

slider to move backward on the chains to its limit, or until it reaches the junction or crotch of the two chains.

The head links, or at least one of the same, should be provided with a stop f^6 , which may be of any suitable construction, for preventing the slider from being pulled off from the top of the chains in the coupling action.

Turning now to the modification shown in Figs. 7 to 13, inclusive, the chief feature of difference over the construction already described lies in the form of the links employed in the coupling-chains. In this case the links g of each chain are in the form of oblong cubical shells, each of which has at its upper end a hook-like part g' and at its lower end an eye g^2 engaged by the part g' of the next adjacent link. The links g of one chain have at their lower ends hook-like projecting parts g^3 , and the links of the opposite chain are open at their upper ends and are provided with cross pieces or bars g^4 , adapted to be engaged by the hooks g^3 . It will be convenient to call the links having the hook-like parts g^3 the "male" links and the links having the bars g^4 the "female" links. In addition to the parts g^4 at their upper ends the female links g have at their lower ends projecting parts g^5 , adapted to overlap the hooks g^3 when in their coupled position with the bars g^4 and lock the said parts together. The joints between the links of the respective chains do not lie exactly in the same transverse line, but are slightly staggered in respect to each other. Hence when the links of the two chains are turned toward each other the part g^3 of the male link can enter the upper end of the female link and engage with the bar g^4 , and when the next headward pair of links are coupled together in the same way the part g^5 of the next adjacent female link will overlap and lock the parts g^3 and g^4 in their coupled position. As in the other case, these links may be coupled by hand and be opened or uncoupled with the single instantaneous action by pulling apart the chains or flaps at the head ends of the same. The slider operates on these chains exactly as in the other construction before described and is acted upon by the chains and thereby automatically forced backward in the uncoupling action, just as in the other case. The form of links shown in these views, Figs. 7 to 13, inclusive, is adapted to be struck up from sheet metal, and it will be noticed that in this form of the chains the male links are all on one chain and the female links on the other chain, while in the form shown in the other views all the links of both chains are both male and female, but the male and female parts of the facing links are in staggered and alternate relation in respect to each other.

The links shown in Figs. 1 to 6 are to be preferred over those shown in Figs. 7 to 13 because stronger, inasmuch as every link has a double coupling with the opposite chain. The fact also that the wings d^2 of the links

project outward between and beyond the flanges f^2 of the slider prevents any wearing contact of the slider with the lacing-strings c .

In Fig. 13 I have shown a different form of fastening device for holding the slider in its uppermost position, consisting of a pair of angular sliding detents g^6 mounted under friction for movement toward and from each other in suitable seats g^7 , formed in the upper end of the slider. The projecting parts of these detents g^6 serve as a finger-pull for the slider, and when the slider is in its uppermost position the said detents may be forced outward, so as to engage over the upper ends of the head links or some projection thereon and serve to hold the slider in its uppermost position.

Of course it will be understood that any other form of fastening device might be employed for holding the slider in its uppermost position.

For coupling together the links of the chains the first time when making the shoes, preliminary to placing the permanent slider in working position on the chains, I provide a special form of locker or tool, which will be found fully disclosed in my companion case, filed of even date herewith, where specific claims will also be found to the specific form of coupling-chains shown in Figs. 7 to 13 of this case.

It will be understood that many minor changes might be made in the details of the construction of the parts herein shown and described, without departing from the spirit of my invention.

From the foregoing statements it must be obvious that a shoe equipped with my device has all the advantages peculiar to a lace-shoe while at the same time it is free from the annoyances hitherto incidental to lace-shoes on account of the lacing and unlacing required every time the shoes were put on or taken off the feet and on account of the lacing-strings coming untied. With my device the lacing-strings may be adjusted from time to time to take up the slack in the shoes, and the shoes may be fastened or loosened more quickly than any other form of shoe hitherto devised, so far as I am aware.

The device affords a flexible joint at the flaps, which is as easy on the foot as an ordinary lace-shoe, and it may be added that the device gives to the shoe an ornamental effect.

It should, perhaps, be noted that all statements of fact herein made as to the action of this device are based upon actual usage of a working device on a wearable shoe.

It will of course be understood that my invention is equally applicable to many other articles besides shoes—as, for example, to mail-bags, corsets, and, generally, wherever it is desired to flexibly and detachably connect two adjacent flaps, strips, or pieces of material.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with shoe-flaps, or other articles to be separably united, of a pair of chains, the links of which are connected for endwise pivotal locking motion, and are provided with coupling parts, located eccentric to the link-pivots, in substantially the plane of the pivotal movement of said links; whereby the links of said chains may be coupled against strain in every direction, except uncoupling strain, from the head links downward, in reverse order to the coupling action, substantially as, and for the purposes set forth.

2. The combination with shoe-flaps, or other articles to be separably united, of a pair of chains, the links of which are connected for endwise pivotal locking movement, and are provided with coupling parts, located eccentric to the link-pivots substantially in the plane of the pivotal movement of said links, and in staggered relation to each other; whereby the links of said chains may be coupled against strain in every direction, except uncoupling strain from the head links downward, in the reverse order of the coupling action, substantially as, and for the purposes set forth.

3. The combination with shoe-flaps, or other articles to be separably united, of a pair of chains, the links of which are connected for endwise pivotal locking movement and are provided with coupling parts located eccentric to the link-pivots, substantially in the plane of the pivotal movement of said links, and a fastening device for securing the head links of said two chains in their coupled position, said parts operating substantially as, and for the purposes set forth.

4. The combination with shoe-flaps, or other articles to be separably united, of a pair of coupling-chains, the links of which are connected for endwise pivotal movement and are provided with coupling parts located eccentric to the link-pivots, substantially in the plane of the pivotal movement of said links, and a cam-acting locker provided with divergent cam-channels through which said chains pass, under the movement of the locker; whereby, under the movement of the locker in one direction, said chains will be coupled together, while, by pulling said chains apart above the locker, said chains will have a camming action on the locker, substantially as described.

5. The combination with shoe-flaps, or other articles to be separably united, of a pair of

coupling-chains, the links of which are connected for endwise pivotal movement and are provided with interlocking parts located eccentric to the link-pivots, substantially in the plane of the pivotal movement of said links, a cam-acting locker provided with divergent cam-channels through which said chains pass, under the movement of the locker, and a fastening device for holding said locker in its uppermost position on said chains, substantially as, and for the purposes set forth.

6. The combination with the flaps of shoes or other articles, of the coupling-chains, the facing links of which have both male and female coupling parts, with the said facing links of the two chains in staggered relation to each other, and a junction or crotch link uniting the lower ends of the two chains and provided with an expanded portion having an eyelet for securing the chains to the shoe at the crotch of the flaps, substantially as described.

7. The combination with the flaps of shoes or other articles, of the coupling-chains, one on each flap, the facing links of which chains are each composed of the body portion d , the reduced wing portion d^2 with the parts d^1 , d^3 and d^4 , and the coupling portion d^5 having the socket d^6 , and the pintle d^7 , the cam-action slider f , f^1 , f^2 , f^3 , as described, and the lacing-string c connecting said links with said flaps, all arranged and operating substantially as and for the purposes set forth.

8. The combination with the pair of chains having coupling parts on their facing links, of the cam-channel slider riding on said chains, for coupling and locking the chains together, and stops on the head links of the chains for preventing the slider from being drawn entirely off from the chains in the coupling movement, substantially as described.

9. The combination with the flaps of shoes or other articles, of the coupling-chains secured one to each flap, the cam-action slider riding on the said chains, the buttons f^5 at the upper ends of the flaps, and the loops f^4 attached to the slider for pulling the same upward in the coupling action and engageable with the buttons f^5 for holding the slider at the head of the chains, substantially as described.

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

WHITCOMB L. JUDSON.

Witnesses:

JAS. F. WILLIAMSON,
FRANK D. MERCHANT.