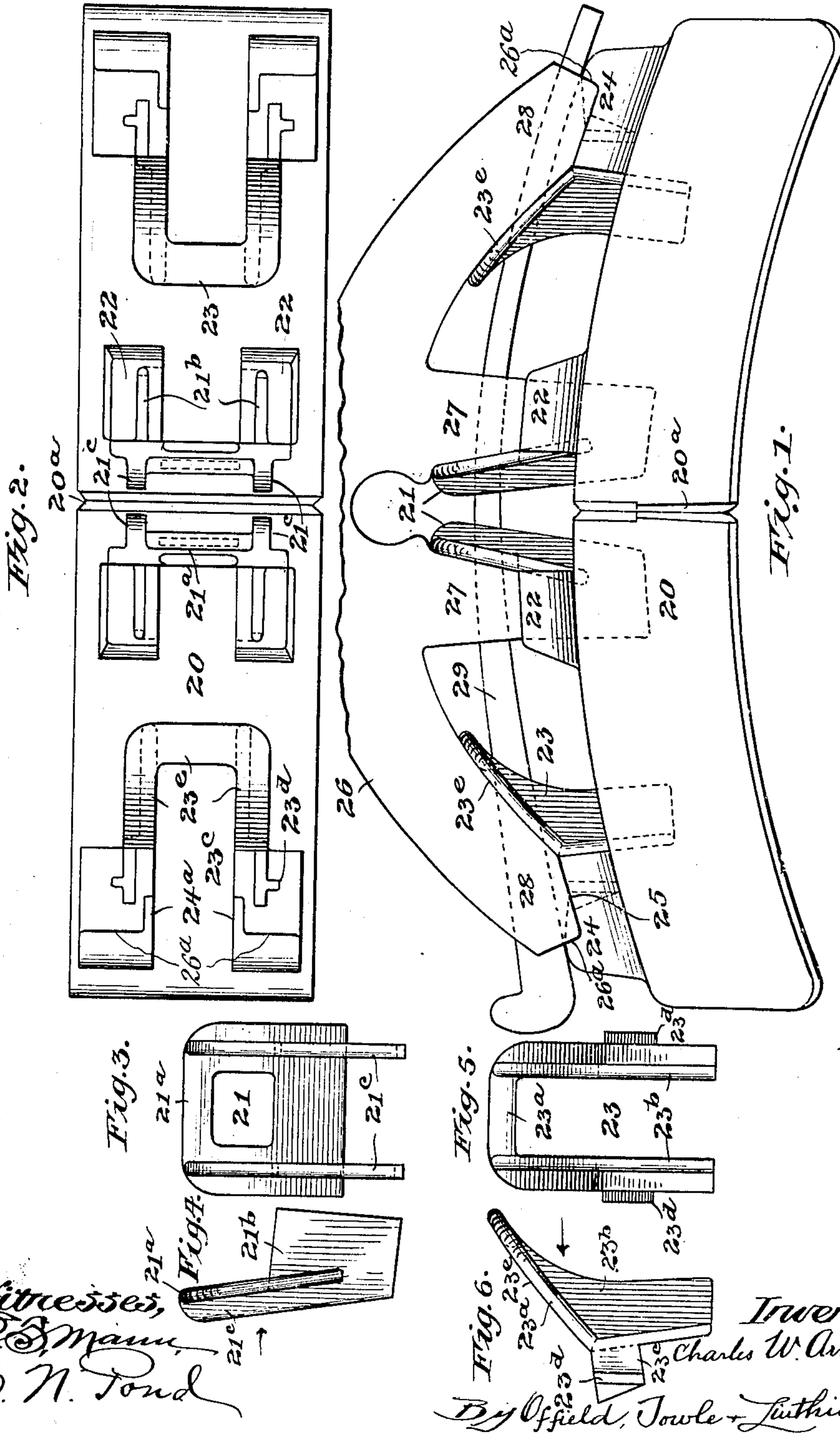


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APPLICATION FILED MAY 10, 1906.

Patented Apr. 27, 1909.
3 SHEETS—SHEET 1.



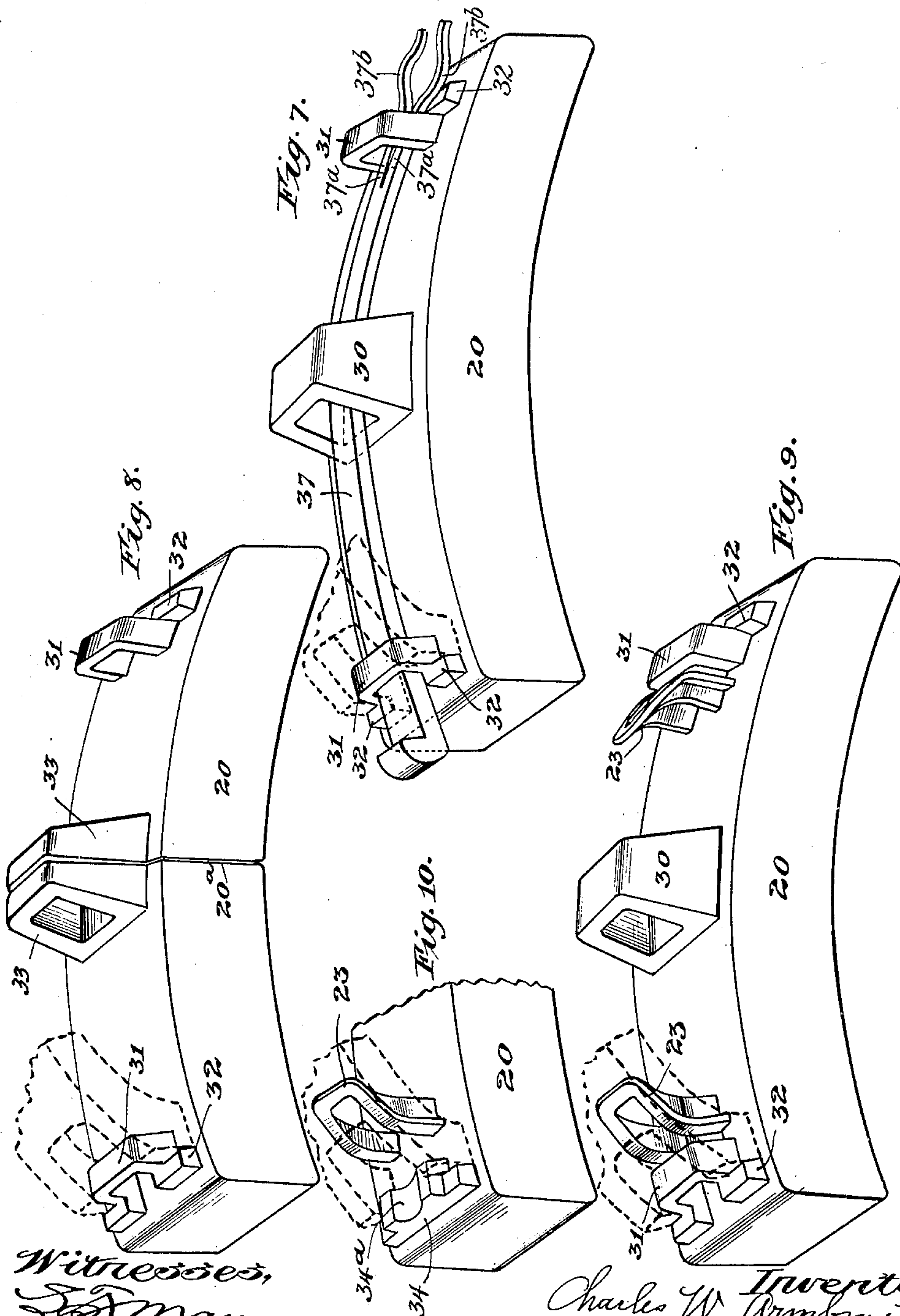
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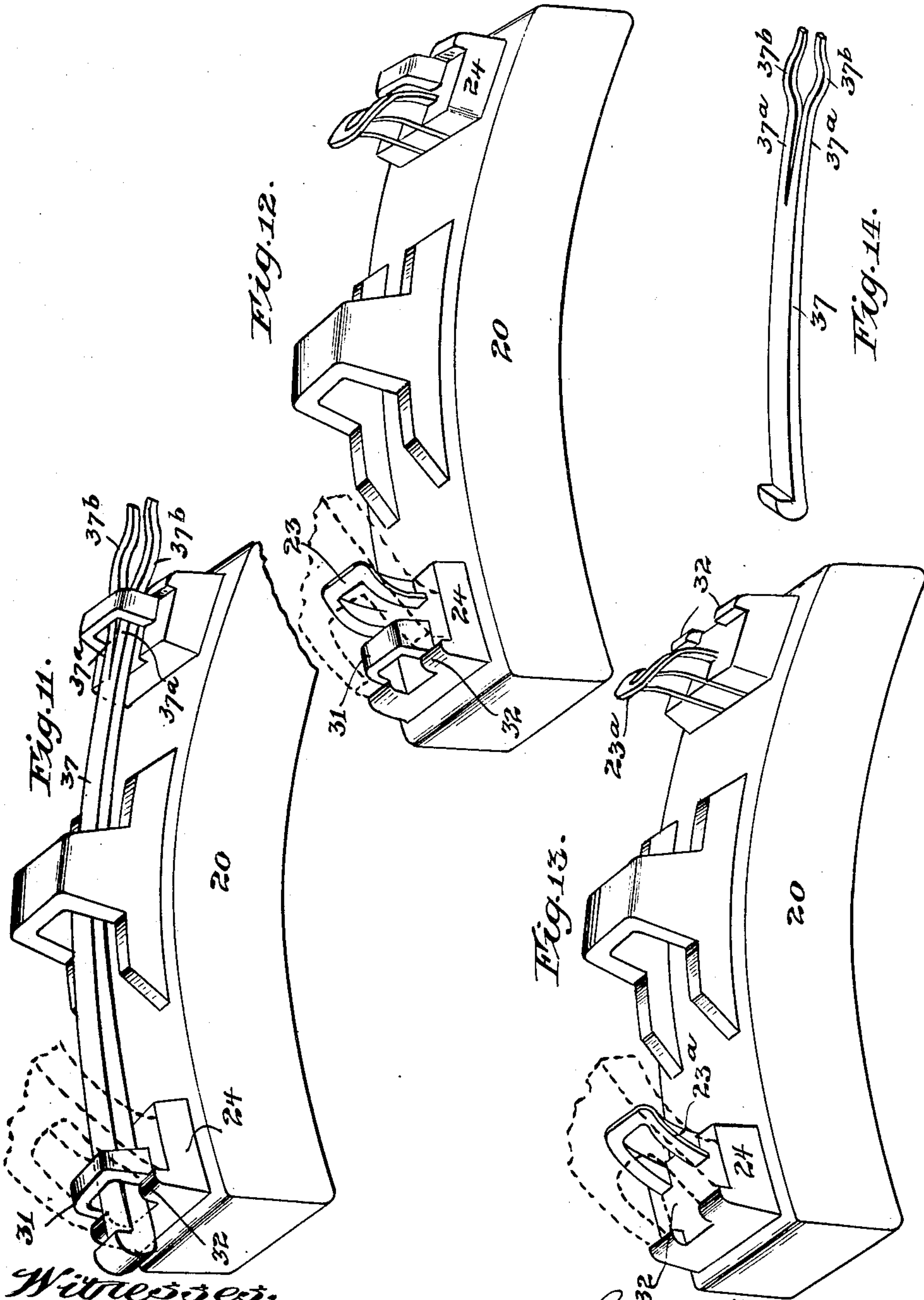
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UNITED STATES PATENT OFFICE.

CHARLES W. ARMBRUST, OF CHICAGO, ILLINOIS.

BRAKE-SHOE.

No. 919,518.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed May 10, 1906. Serial No. 316,170.

To all whom it may concern:

Be it known that I, CHARLES W. ARMBRUST, 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 Brake-Shoes, of which the following is a specification.

This invention relates to brake shoes of the class in which the wearing member or shoe proper is separably connected to the back or head supporting the same; and the invention pertains more especially to novel and improved means for positioning and securing the shoe upon and to the head.

Among the leading novel features of the invention may be mentioned the provision of a guide lug engaging the forked ends of the head and also adapted to cooperate with the fastening key in retaining the shoe upon the head, the characteristic feature of this guide lug residing in the fact that it also constitutes in effect a keeper or staple for engagement with the fastening key.

Another prominent feature of the invention resides in a novel form and location of keeper lugs on the back of the shoe also adapted to be engaged by the fastening key; such keeper lugs having a comparatively extended inclined outer surface that is shaped to fit the contour of the inner side of the head adjacent to the ends of the latter.

Another feature of the invention resides in the provision of a novel form and construction of central keeper lugs on the back of the shoe.

The invention also includes a novel form of fastening key that is adapted, although not exclusively adapted, for cooperation with the other novel features above enumerated.

The invention will be readily understood when considered in connection with the accompanying drawings, which illustrate several practical embodiments thereof, and wherein,—

Figure 1 is a side elevational view of a brake-head, partly broken away, and a brake-shoe fastened thereto; Fig. 2 is a top plan view of the brake-shoe; Figs. 3 and 4 are, respectively, rear and edge views of one of the central keeper lugs shown in Figs. 1 and 2; Figs. 5 and 6 are, respectively, rear and edge views of the inclined keeper lugs lying to either side of the central lugs; Figs. 7, 8 and 9 are perspective views of shoes, showing various arrangements and combinations of my novel guide and keeper lugs;

Fig. 10 is a fragmentary view in perspective, showing a modification of Fig. 9; Figs. 11, 12 and 13 are perspective views, generally similar to Figs. 7, 8 and 9, showing still further modifications of structure and arrangement of the guide and keeper lugs; and Fig. 14 is a perspective view of my novel fastening key.

Referring to the drawings, 20 designates the shoe-body proper in all the several figures of the drawings, which may be of the usual cast metal construction and regulation size and adapted on its face to fit the contour of the tread of a car wheel.

Referring first to Figs. 1 to 6, inclusive, 21 designates as an entirety each of a pair of central keeper lugs mounted on the back of the shoe-body, each of which lugs preferably comprises an apertured web 21^a adapted for the passage of the fastening key, and front and rear flanges 21^b and 21^c, of which there are, as herein shown, a pair on either side of the web. The keeper as herein shown is a malleable or steel metal insert, although it is to be understood that it may be formed of a metal stamping or of heavy wire. It is also shown associated with spacing lugs 22 on the back of the shoe-body, said spacing lugs being of the character disclosed in my prior patent, No. 817,541, granted April 10, 1906. The flanges 21^b are buried in the spacing lugs 22 and in the body of the shoe, and the flanges 21^c are likewise embedded at their lower ends in the body of the shoe.

On either side of the central keeper lugs above described are located auxiliary keeper lugs designated as an entirety by 23, which lugs are also herein shown as comprising malleable or steel inserts open for the passage of the fastening key and comprising an inverted U-shaped member 23^a having on one side a pair of flanges 23^b, and on the opposite side a pair of anchor-lugs 23^c, each of which latter has, on its outer side, a projecting rib or fin 23^d that assists in anchoring the keeper to a spacing lug 24 on the end of the shoe-body, the function of the spacing lugs 24 being similar to that of the spacing lugs 22, and fully described in my Letters Patent aforesaid. The lower end of the keeper is cast and embedded in the body of the shoe, as shown. An important feature of this keeper resides in the formation of its outer end, which consists of an inwardly and upwardly inclined portion 23^e that is of considerable extent and is shaped to fit the contour of the inner side of that portion of the

head directly overlying the keeper; this construction serving, in cooperation with the key, consistently with an economy of space, to pin and secure the end portions of the shoe to the head in case the shoe should break transversely anywhere between the two keepers. The spacing lugs 24 on the ends of the shoe afford substantial seats or steps for the ends of the head, as indicated at 25, and said lugs are also preferably provided with shoulders 26^a against which the ends of the head abut to prevent relative longitudinal displacement between the head and the shoe. The lugs 24, as shown in Fig. 2, are also provided with inwardly projecting lugs 24^a that lie between the forks of the head and constitute guide-lugs serving to prevent lateral displacement between the head and the shoe.

Fig. 1 clearly shows the manner of engagement of the head with the shoe thus formed, wherein 26 designates as an entirety the head, 27 the usual central lugs stepped upon the central spacing lugs 22, and on their inner sides contacting the upright walls of the central keepers 21, and 28 designates the forked ends shown as stepped upon the spacing lugs 24 and abutting the shoulders 26^a and guide-lugs 24^a. The inner surface of the head is also shown as lying in close contact with the extended inclined outer face of the keeper lugs 23. 29 shows a fastening key, which may be of the usual form, or of the special construction shown in Figs. 14 and 15 and hereinafter more particularly described, said key passing between the forked ends of the head and through the keeper-lugs 21 and 23 of the shoe and the central retaining lugs 27 of the head.

In Figs. 1 and 2 I have indicated a central transverse scoring 20^a of the shoe-body which may or may not be employed in association with the fastening features above described, which scoring forms no part of my present invention, the same constituting in part the subject-matter of my Letters Patent aforesaid.

Fig. 7 shows the shoe-body provided on its back with a single central apertured keeper-lug 30, and on its ends with keeper-lugs 31, which latter lugs not only interlockingly engage the fastening key, but are also adapted to lie between the forks of the head so as to serve the additional function of lateral guide-lugs. The ends of the forks of the head are stepped on the back of the shoe on either side of the lugs 31, and on either side of said lugs are formed what I term abutment-lugs 32, the inner faces of which constitute in effect shoulders abutting against the ends of the forks of the head to prevent relative longitudinal displacement.

Fig. 8 shows a similar structure and relative arrangement of end lugs as Fig. 7, applied to a transversely scored shoe, said shoe being equipped centrally with a pair of cen-

tral fastening lugs 33, said lugs being in effect the lug 30 of Fig. 7 centrally divided, the purpose of said division being to provide a fastening lug for each half of the shoe-body in case the latter should break centrally. 70

Fig. 9 shows a modification of Fig. 7 wherein, in addition to the guide and abutment lugs of Fig. 7, I have shown the shoe as equipped with the keeper lugs 23 of Fig. 1, said keeper-lugs being disposed slightly inwardly of the guide-lugs 31. 75

Fig. 10 shows a shoe similar to Fig. 9, excepting that the guide-lug 34, instead of having the keeper formation of Figs. 7, 8 and 9, is simply provided with a seat 34^a for the key, without interlockingly engaging the key. It will be observed that in Figs. 7 and 8 the guide-lugs 31 constitute the only keeper-lugs at the ends of the shoe, and in Fig. 10 the lug 23 constitutes the only keeper-lug for the shoe; while in Fig. 9 both of said lugs cooperate as keepers. 85

Figs. 11 shows a construction wherein the guiding and abutment lugs of Figs. 7 and 8 are formed upon spacing lugs 24, to prevent injury to the brake-head when the shoe has worn away, as more fully described in my former Letters Patent above referred to. 90

Fig. 12 shows a combination of guide and keeper lugs 31 and 23 of Fig. 9 with and upon a spacing lug 24, for the same purpose. 95

In Fig. 13 I have shown a construction wherein a keeper-lug 23^a and abutment lugs 32 are associated with and upon a spacing lug 24; the keeper-lug 23^a in this instance being made sufficiently narrow to lie between the forks of the head, so as to serve the additional function of a guide-lug. Of course, said keeper-lug might be thus employed alone and without the spacing lug 24. It should be understood that by the term "keeper-lug" I mean a lug or projection having an opening or aperture through which the fastening key passes, and so formed as to have an interlocking relation with said key to prevent displacement of the shoe from the head unless the key is withdrawn. 100 105

My invention, in what I regard as its most complete and efficient form, employs both the keeper-lug 23 and the combination guide and keeper lug 31, also preferably mounted upon and in association with the spacing lug 24; but it should be understood that the lugs 23 and 31 are capable of independent use to advantage, either with or without the spacing lug 24. 115 120

In Fig. 14 I have shown my improved form of key 37, which is formed by longitudinally splitting the end of the key forming a pair of prongs 37^a which, near their outer ends, are bowed or swelled as shown at 37^b. In practice, this swelled split end of the key can be compressed sufficiently to be driven through the lower lug, and by its ex- 125 130

pansion forms a lock to prevent the lower end of the shoe from falling off in case the shoe should be broken. This style of key can be made from the standard key. To illustrate the application of the key above described I have shown the same as applied in Figs. 7 and 11.

I claim:

1. A brake-shoe provided on its back with a central keeper-lug, and with a single lug each constituting a combination guide and keeper lug on either side of said central lug.
2. A brake-shoe provided on its back with a central keeper-lug, a keeper-lug on either side of said central keeper-lug, and combination guide and keeper lugs beyond said last-named keeper-lugs.
3. A brake-shoe provided on its back near each end thereof with a combination guide and keeper-lug and with abutment lugs on either side of said combination lugs.
4. A brake-shoe provided on its back with a central keeper-lug and on either side thereof with combination guide and keeper lugs, and on either side of the latter with abutment lugs.
5. A brake-shoe provided on its back with keeper-lugs on either side of the center thereof, said lugs having inclined surfaces of greater extent than the width of the lug engaging the inner surface of the head.
6. A brake-shoe provided on its back on either side of the center thereof with keeper-lugs, said keeper-lugs each having an inclined head - engaging surface of greater width than the lug and extending inwardly of the head and shoe.

7. A brake-shoe having central and outer keeper-lugs all comprising separate metallic members cast in the body of the shoe.

8. The combination with a shoe-body, of a keeper-lug comprising a separate metallic member embedded in said shoe, said lug having a strengthening rib or flange formed on an upstanding portion thereof and disposed longitudinally of the shoe.

9. The combination with a shoe-body, of a keeper-lug comprising a separate metallic member embedded in said shoe, said lug having strengthening ribs or flanges on both sides thereof disposed longitudinally of the shoe.

10. A shoe-body provided with spacing-lugs on each end, and further provided with combination guide and keeper-lugs on said spacing lugs.

11. A shoe-body provided with spacing-lugs on each end, and with combination guide and keeper lugs on said spacing-lugs, and with other keeper-lugs inside said combination guide and keeper lugs.

12. A fastening-key for brake-shoes provided on its pointed end with a pair of prongs adapted to spring laterally into locking engagement with a fastening device of the shoe, said prongs being swelled on their outer margins near the tips thereof.

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