

No. 721,563.

PATENTED FEB. 24, 1903.

H. C. HINE.
SUSPENDERS.

APPLICATION FILED AUG. 9, 1902.

NO MODEL.

Fig. 1.

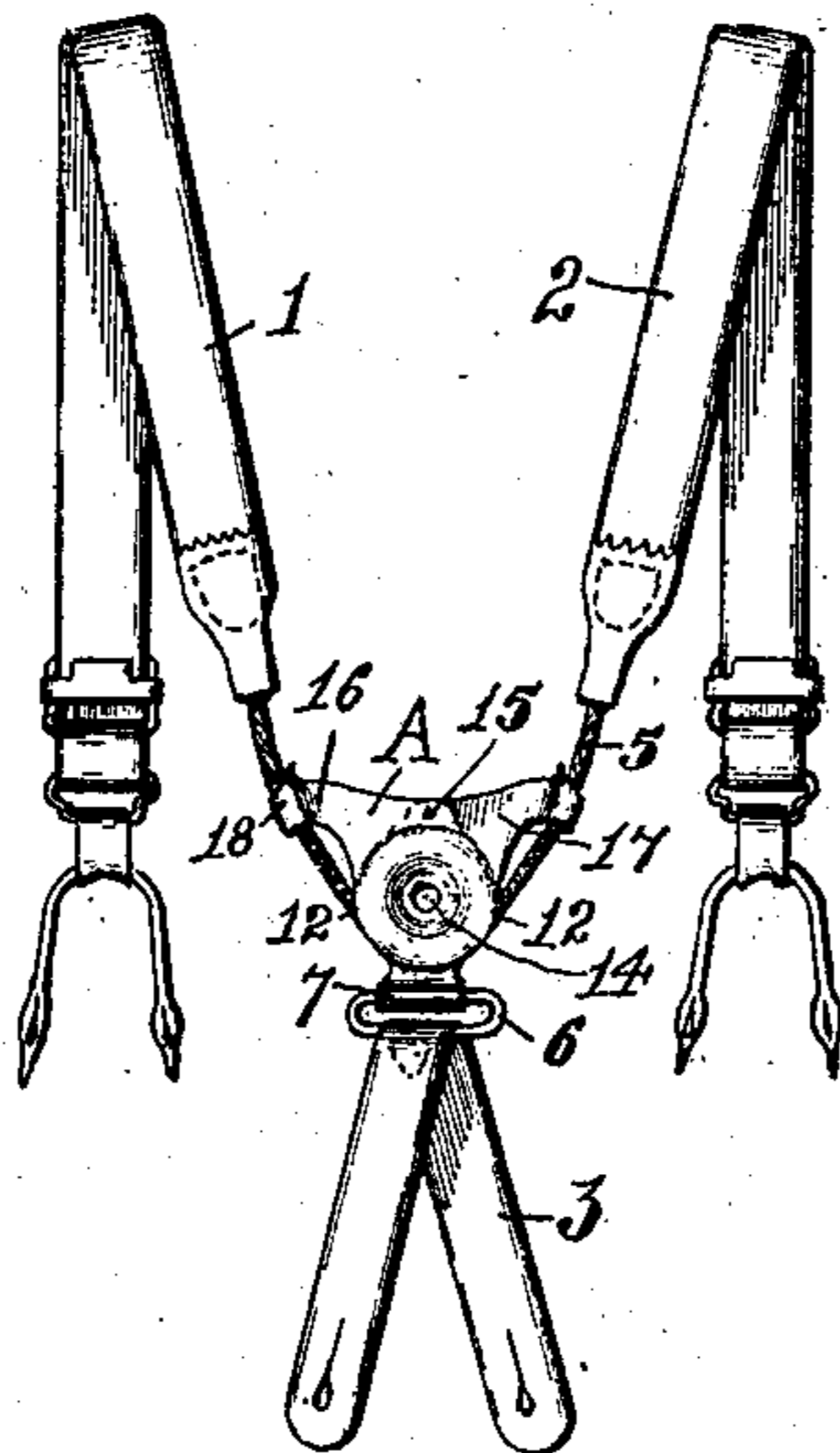


Fig. 2.

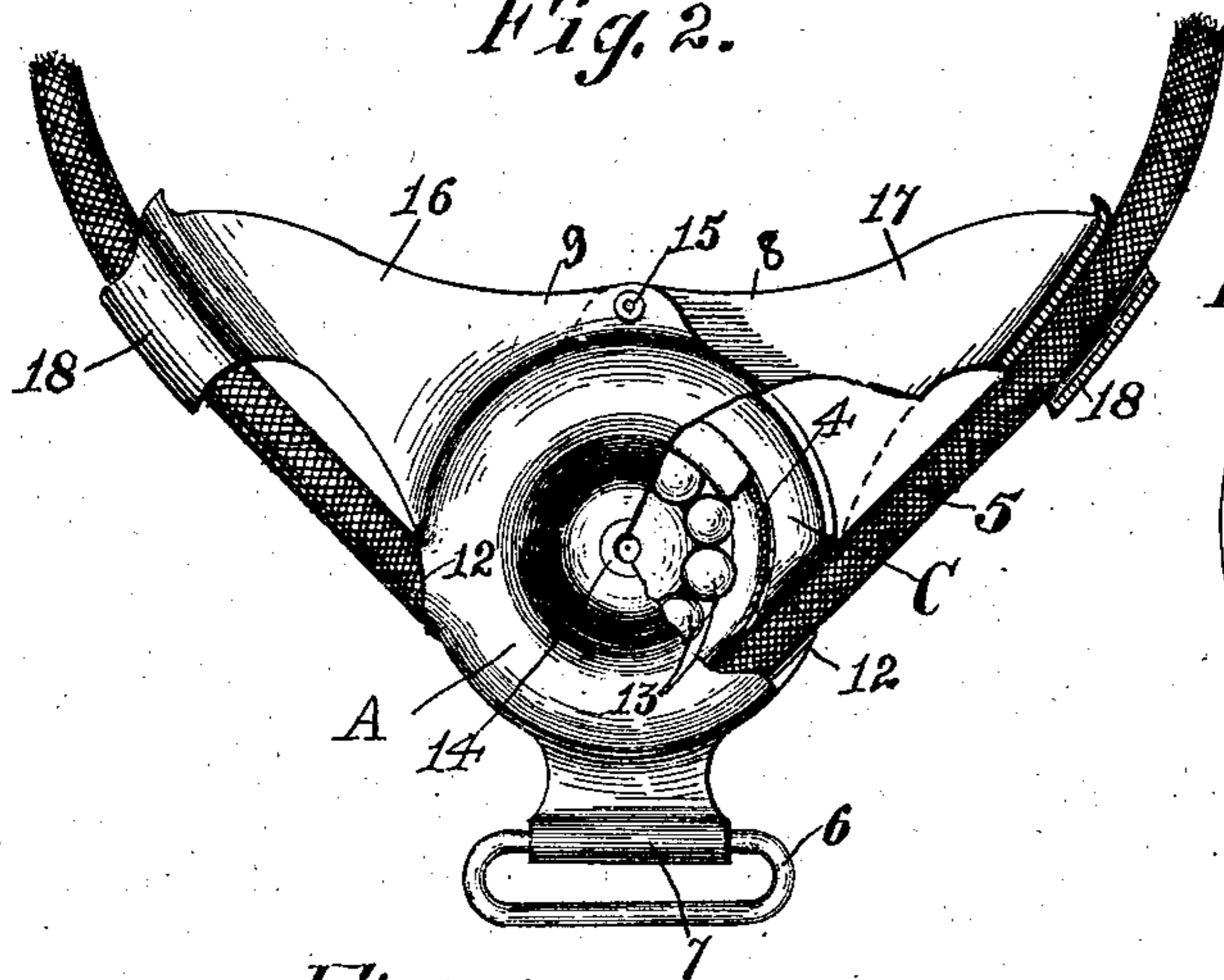


Fig. 3.

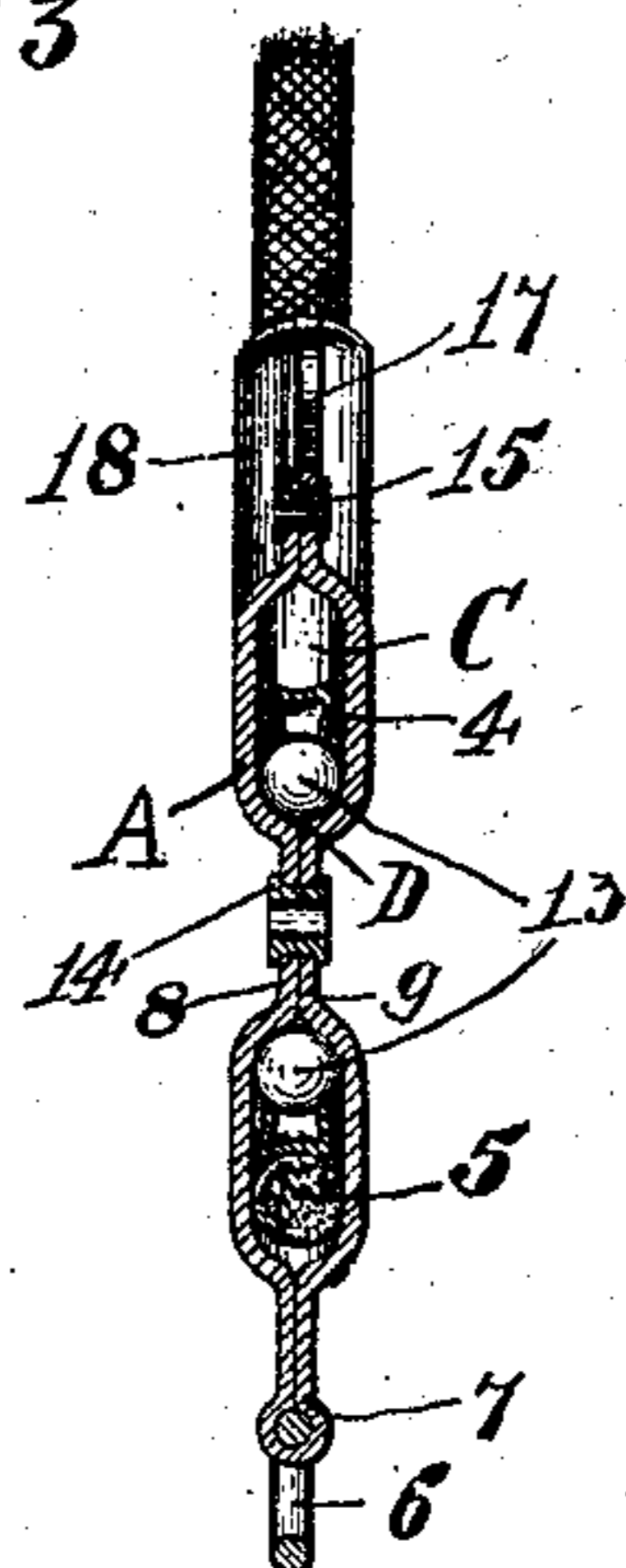


Fig. 4.

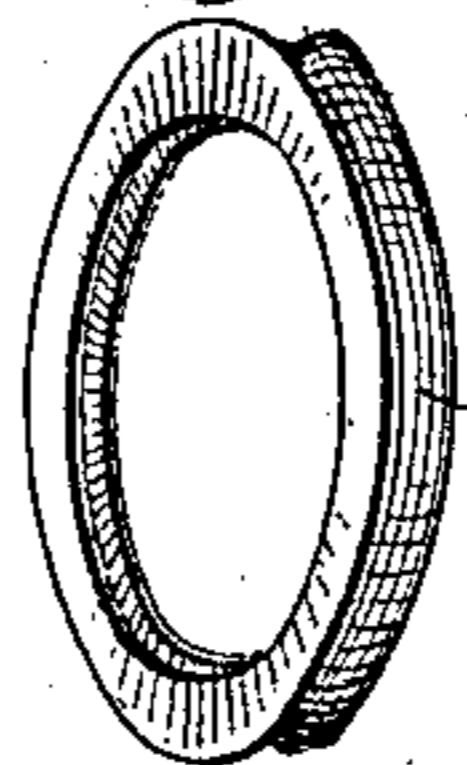


Fig. 5.

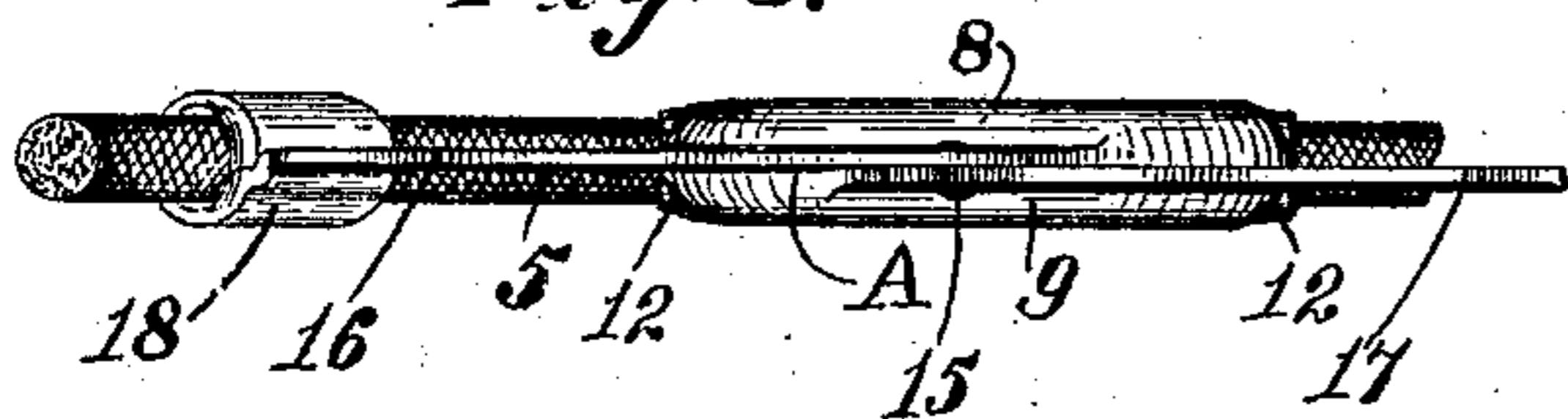
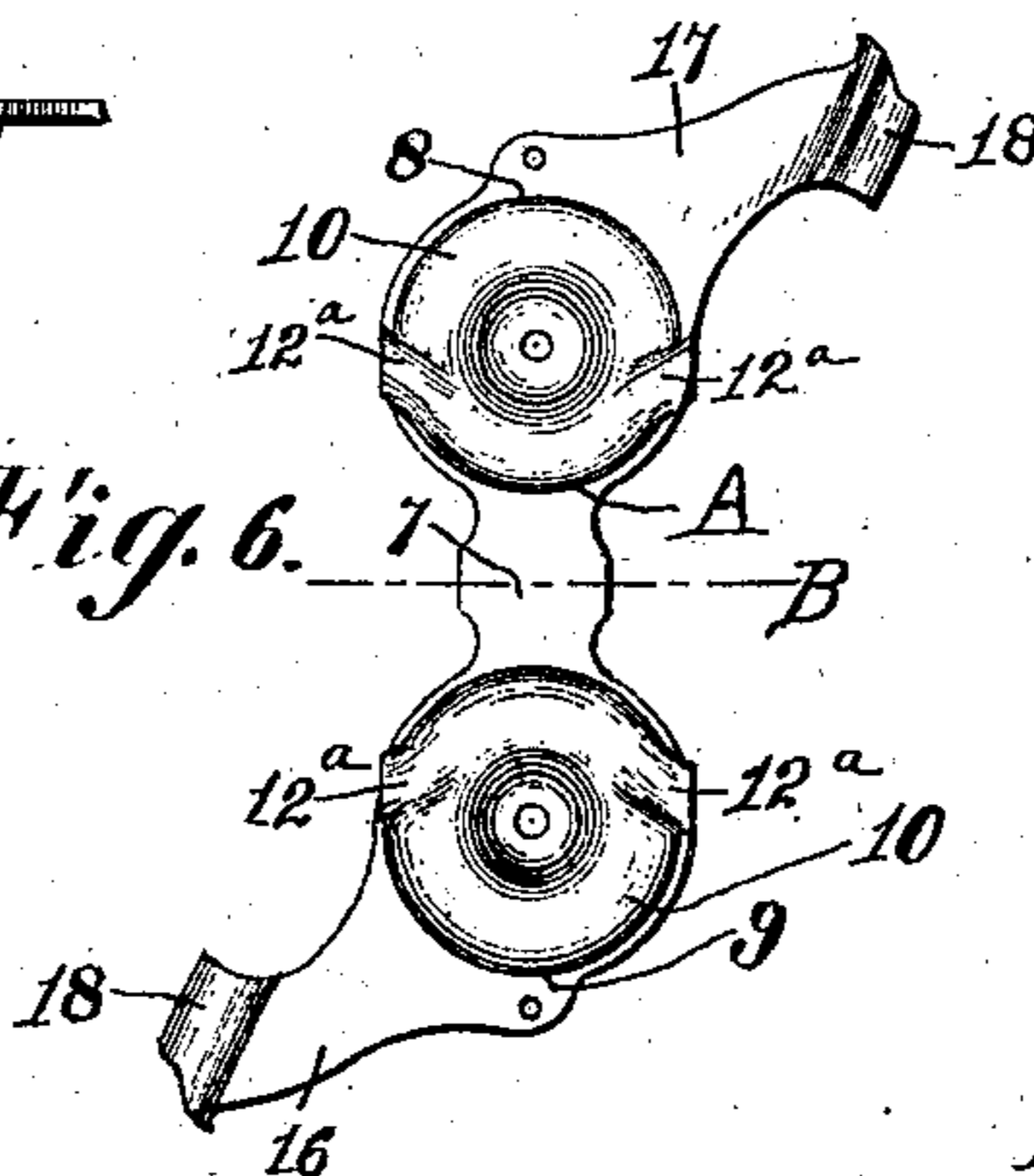


Fig. 6.



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SUSPENDERS.

SPECIFICATION forming part of Letters Patent No. 721,563, dated February 24, 1903.

Application filed August 9, 1902. Serial No. 119,036. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. HINE, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Suspenders, of which the following is a specification.

This invention relates to suspenders; and its object is to improve the connection between the shoulder-straps and the rear suspender-end, with a view to securing ease of action of the shoulder-straps and greater durability of the suspenders.

In the drawings forming part of this specification, Figure 1 is a view of a pair of suspenders made in accordance with my present improvements. Fig. 2 is a view, partly sectional, of a hanger forming a portion of the suspenders and containing a sheave which is mounted on a set of bearing-balls. Fig. 3 is a vertical cross-section of the device shown in Fig. 2. Fig. 4 is a perspective view of the preferred form of sheave. Fig. 5 is a partial plan of the device shown in Fig. 2. Fig. 6 shows the blank from which the hanger shown at Fig. 2 is folded.

In the several views similar parts are designated by similar characters of reference.

The shoulder-straps of the suspender are designated as 1 and 2 and the rear suspender-end or end pieces as 3. These parts are connected by means of a sheet-metal hanger A, preferably folded, in which is housed a sheave 4, over which runs a cord 5, which connects the ends of the straps 1 and 2. A chape 6 is hung in the fold 7 at the lower end of the hanger and carries the rear suspender-end 3.

The hanger A consists of a pair of plates 8 and 9 of thin sheet metal, each being provided at 10 with an annular depression. When the blank is folded transversely upon the line B, about midway of its length, Fig. 6, said depressions come together, forming an annular shell or chamber C, Fig. 3, within which is placed the sheave 4, said chamber being also of sufficient diameter and transverse measurement to accommodate the cord 5 and also having opposite eyes 12 for the passage of the cord, said eyes consisting of pairs of channels 12^a.

It will be observed that the sheave 4 is in the form of a ring and that a set of balls or

rollers 13 is inserted between said sheave and a track D, Fig. 3, formed by the cooperation of the inner walls or portions of the annular depressions 10, which are clearly seen at Fig. 6. The plates 8 and 9 are preferably connected by a rivet 14, arranged centrally thereof, and also by another rivet 15 above the annular shell. The hanger is also preferably provided with spreader-arms 16 and 17, each having at its outer end an eye, guide, or leader 18, through which the cord passes. These arms give the cord and the straps 1 and 2 an extra separation, so as to enable them to set well and to have the requisite freedom of action. One of said arms, as 16, is preferably formed upon the front plate 9 of the hanger and the other of said arms upon the rear plate 8.

It will be seen that the several parts of the connecting device between the shoulder-straps and the suspender-end may be formed from thin sheet metal and that a free action for the shoulder-straps is secured, while all liability to cutting away of the thin sheet metal usually employed for this class of goods is avoided, so that a durable, easy-working, and otherwise desirable suspender is produced at very low cost.

It will be observed that the device A is loosely carried by the cord 5, so as to permit free movement of the cord therein, that the sheave 4 is confined within the folded portion of the hanger, that means are provided upon the housing for guiding or leading the cord between the sheave and the end of the straps 1 and 2, and that the sheave 4 is located about midway between the arms 16 and 17 and below the line of said arms or below the line of the leaders 18, formed upon said arms.

Having described my invention, I claim—

1. The combination of a pair of shoulder-straps, a suspender-end, a sheave connected to said suspender-end, a cord running upon said sheave and connecting the ends of said shoulder-straps, and a spreader over which said cord may run freely.

2. The combination of a pair of shoulder-straps, a suspender-end, a spreader to which said suspender-end is attached, a sheave supported upon said spreader, and a cord connected to said shoulder-straps, said cord running freely both over said spreader and over said sheave between said shoulder-straps

3. The combination of a pair of shoulder-straps, a suspender-end, a spreader to which said suspender-end is connected, a cord running freely over said spreader and connecting said shoulder-straps, and a support or bearing for said cord between the ends of said spreader. 5
4. The combination of a pair of shoulder-straps, a suspender-end, a folded sheet-metal hanger to which said suspender-end is connected, a sheave mounted upon said hanger within the folded portion thereof, spreader-arms formed upon said hanger, and a cord running freely over both said sheave and said spreader-arms and connecting the ends of said shoulder-straps. 10 15
5. The combination of a pair of shoulder-straps, a suspender-end, a folded sheet-metal hanger to which said suspender-end is connected, a sheave mounted on said hanger within the folded portion thereof, spreader-arms formed upon said hanger, each of said arms being formed at its end into a tubular leader; and a cord running freely over both said sheave and said spreader-arms and connecting the ends of said shoulder-straps. 20 25
6. The combination of a pair of shoulder-straps, a plate folded transversely and forming a housing, a sheave mounted within said housing, a pair of leaders one formed upon the front side and the other upon the back side of the housing, a cord rove through said leaders and around said sheave and connecting the ends of said shoulder-straps, a chape caught in the fold of said housing, and a suspender-end attached to said chape. 30 35
7. The combination of a pair of shoulder-straps, a plate folded transversely to form a housing, a sheave mounted within said housing, a cord running upon said sheave and connecting the ends of said shoulder-straps, and means upon said housing for guiding or leading said cord and permitting it to move freely between said sheave and said ends. 40 45
8. The combination of a pair of shoulder-straps, a plate folded transversely about midway of its length to form a housing, a sheave mounted within said housing, and a cord running upon said sheave and connecting the ends of the shoulder-straps, said housing being stamped with opposite circular depressions which together form a shell within which said sheave is housed, and said shell being provided with eyes for the entrance of the cord. 50 55
9. The combination of a pair of shoulder-straps, a plate folded transversely to form a housing, a sheave mounted within said housing, a cord running upon said sheave and connecting the ends of the shoulder-straps, said housing being stamped with opposite circular depressions which together form a shell within which said sheave is housed, and said shell being provided with eyes for the entrance of the cord thereinto, and means upon said housing for guiding or leading said cord between said eyes and said strap ends, said guiding means being so disposed as to give an extra separation to said cords and straps. 60 65 70
10. The combination of a pair of shoulder-straps, a suspender-end, a raceway connected to said suspender-end, a single set of bearing-balls in said raceway, an annular sheave surrounding said bearing-balls, and a cord running upon said sheave and connecting the ends of said shoulder-straps. 75
11. The combination of a pair of shoulder-straps, a suspender-end, a spreader, a raceway formed upon said spreader, a set of bearing-balls in said raceway, a sheave mounted upon said balls, and a cord rove over said spreader and said sheave and connecting the ends of said shoulder-straps. 80
12. The combination of a pair of shoulder-straps, a suspender-end, a folded sheet-metal hanger to which said suspender-end is connected, annular depressions stamped in said hanger and cooperating to form a ball-track, a set of balls on said track, a sheave mounted upon said balls and confined within the folded portion of said hanger, spreader-arms formed upon said hanger, and a cord running over said sheave and said spreader-arms and connecting the ends of said shoulder-straps. 85 90 95
13. The combination of a pair of shoulder-straps, a suspender-end, a folded sheet-metal hanger to which said suspender-end is connected, annular depressions stamped in said hanger and cooperating to form a ball-track, a set of balls on said track, a sheave mounted upon said balls and confined within the folded portion of said hanger, spreader-arms formed upon said hanger, and a cord running over said sheave and said spreader-arms and connecting the ends of said shoulder-straps, a leader being formed upon each side of said hanger, and said cord being rove through said leaders. 100 105
14. The combination of a pair of shoulder-straps, a plate folded transversely, annular depressions formed in said plate, said depressions cooperating to form a ball-track, a set of balls around said track, a sheave surrounding said balls, a pair of leaders formed one upon the front side and the other upon the back side of said folded plate, and a cord rove through said leaders and around said sheave and connecting the ends of said shoulder-straps. 110 115 120
15. The combination of a pair of shoulder-straps, a plate folded transversely, annular depressions formed in said plate, said depressions cooperating to form a ball-track, a set of balls around said track, a sheave surrounding said balls, a pair of leaders formed upon said folded plate, and a cord rove through said leaders and around said sheave and connecting the ends of said shoulder-straps, said leaders giving an extra separation to said cord and straps. 125 130
16. The combination of a pair of shoulder-straps, a suspender-end, a plate folded transversely and connected to said suspender-end,

a sheave upon said plate, and a cord running upon said sheave and connecting the ends of the shoulder-straps, said plate being stamped with opposite circular depressions which together form an annular shell or chamber within which said sheave is housed, the inner part of said chamber forming a ball-track which is surrounded by said sheave, and a set of bearing-balls disposed between said track and said sheave.

17. The combination of a pair of shoulder-straps, a plate folded transversely, a sheave upon said plate, and a cord running from said sheave and connecting the ends of the shoulder-straps, said housing being stamped with opposite circular depressions which together form an annular shell within which said sheave is housed, the inner part of said chamber forming a ball-track which is surrounded by said sheave, a set of bearing-balls disposed between said track and said sheave, and a centrally-arranged transverse connector for the sides of said housing or shell, between the sheave and the ends of the shoulder-straps.

18. The combination of a pair of shoulder-straps, a sheet-metal hanger a portion whereof is formed into a ball-track, a sheave surrounding said track, a set of balls between said sheave and track, a cord running over said sheave and connecting said straps, and a suspender-end connected to said hanger.

19. The combination of a pair of shoulder-straps, a suspender-end, a hanger comprising a pair of sheet-metal plates to which said suspender-end is connected, a sheave between said plates, means for connecting said plates, spreader-arms connected to said hanger, and a cord running freely over both said sheave and said spreader-arms and connecting the ends of said shoulder-straps.

20. The combination of a pair of shoulder-straps, a suspender-end, a sheet-metal hanger to which said suspender-end is connected, said hanger comprising a pair of plates, a sheave mounted between said plates, arms provided upon said hanger, each of said arms being formed at its end into a tubular leader; and a cord running freely over both said sheave and said spreader-arms and connecting the ends of said shoulder-straps.

21. The combination of a pair of shoulder-straps, a pair of sheet-metal plates, a sheave mounted between said plates, a pair of leaders one formed upon the front plate and the other upon the back plate, a cord rove through said leaders and around said sheave and connecting the ends of said shoulder-straps, and a suspender-end attached to said plates.

22. The combination of a pair of shoulder-straps, a pair of sheet-metal plates, a sheave mounted between said plates, a cord running upon said sheave and connecting the ends of said shoulder-straps, and means formed upon

said plate for guiding or leading said cord freely between said sheave and said straps.

23. The combination of a pair of shoulder-straps, a pair of sheet-metal plates, a sheave mounted between said plates, and a cord running from said sheave and connecting the ends of the shoulder-straps, said housing being stamped with opposite circular depressions which together form a shell within which said sheave is housed, and said shell being provided with eyes for the entrance of the cord.

24. The combination of a pair of shoulder-straps, a pair of plates, a sheave mounted between said plates, and a cord running upon said sheave and connecting the ends of the shoulder-straps, said plates being stamped so as to form a shell within which said sheave is housed, and said shell being provided with eyes for the entrance of the cord therinto, and means upon at least one of said plates for guiding or leading said cord, said guiding means being so disposed as to give an extra separation to said cords and straps.

25. The combination of a pair of shoulder-straps, a suspender-end, a pair of sheet-metal plates forming a hanger to which said suspender-end is connected, an annular ball-track stamped in said hanger, a set of balls on said track, a sheave mounted upon said balls, spreader-arms upon said hanger, and a cord running over said sheave and said spreader-arms and connecting the ends of said shoulder-straps.

26. As an improvement in suspenders, the combination with the end pieces and straps, of an intermediate member, comprising the spreading-arms and a sheave located about midway between said arms and also located below the line of said arms, and a cord connecting the ends of the straps and running over said spreading-arms and sheaves.

27. The combination with the end piece and the straps, of a roller-bearing and a support therefor, an intermediate connecting member comprising a guide-sheave carried on the roller-bearing, guide-arms for separating the straps, and means for connecting said arms and the support for the roller-bearing.

28. In a suspender of the class described, the combination with the straps having a connecting-cord, of an intermediate member carried by said cord and comprising a centrally-disposed roller-bearing-supporting device, side leaders for spreading the cord, a suspender-end, and means for connecting the suspender-end to said device.

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Witnesses:

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