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McManus et al.

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[54] **HAND SAW HAVING DEMOUNTABLE BLADE**

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[52] **U.S. Cl.** ..... **145/31 R,** 145/108 R

[51] **Int. Cl.** **B27b 21/00**

[58] **Field of Search** .... 145/31 R, 33 R, 33 A, 35 E, 145/35 R, 33 E, 31 B, 108 R

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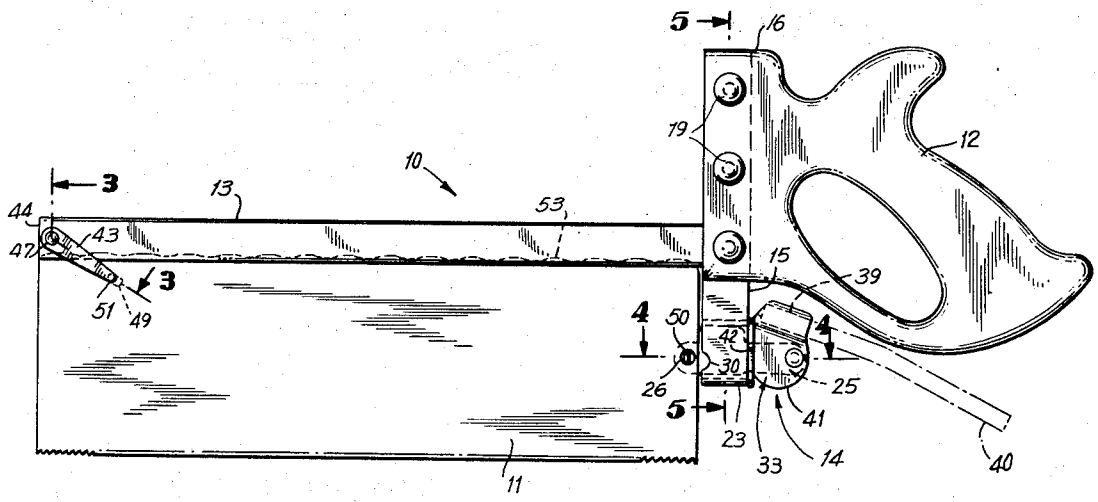
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Attorney, Agent, or Firm—Mark T. Basseches; Paula T. Basseches

[57] **ABSTRACT**

A saw frame of the so-called back saw type is disclosed, including a readily replaceable saw blade, the assembly being characterized by novel and improved coupling means for securely attaching the blade to the frame, while at the same time rigidifying the blade against flexure in the plane of the blade.

6 Claims, 6 Drawing Figures



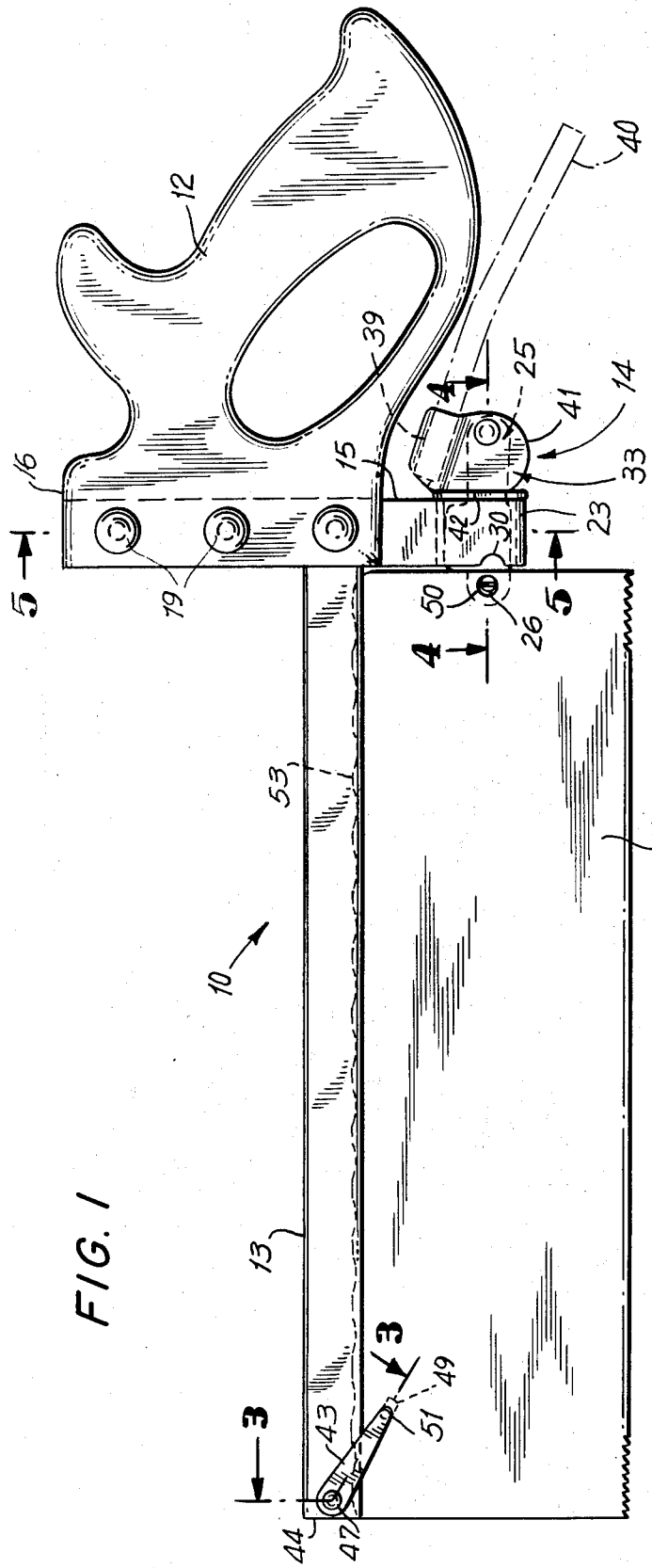

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FIG. 1

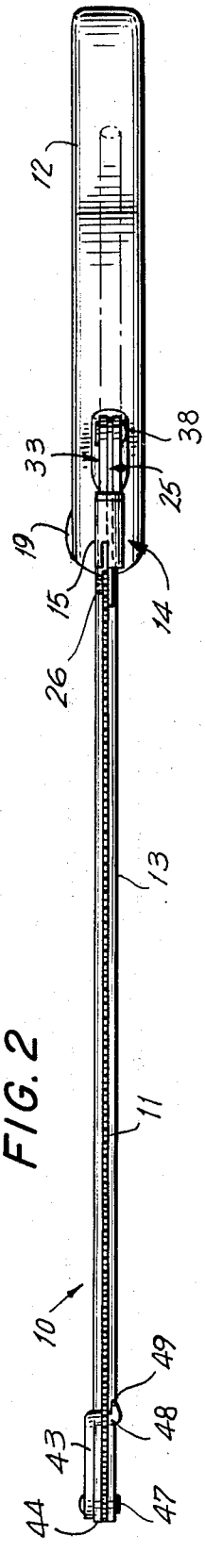

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FIG. 2

FIG. 3

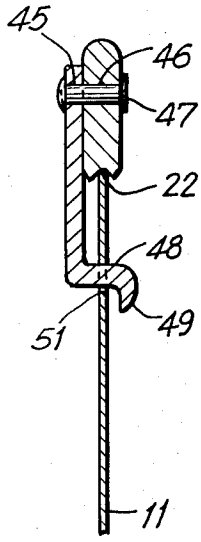


FIG. 4

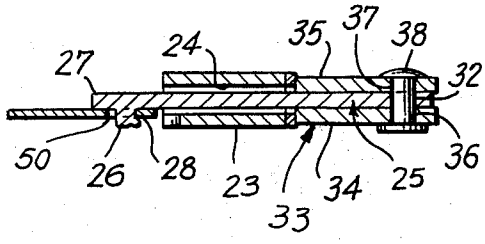


FIG. 5

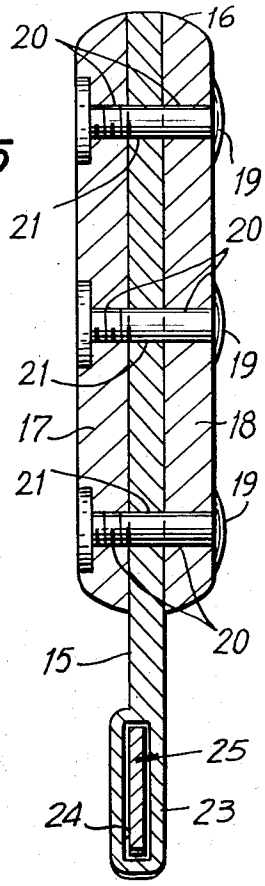
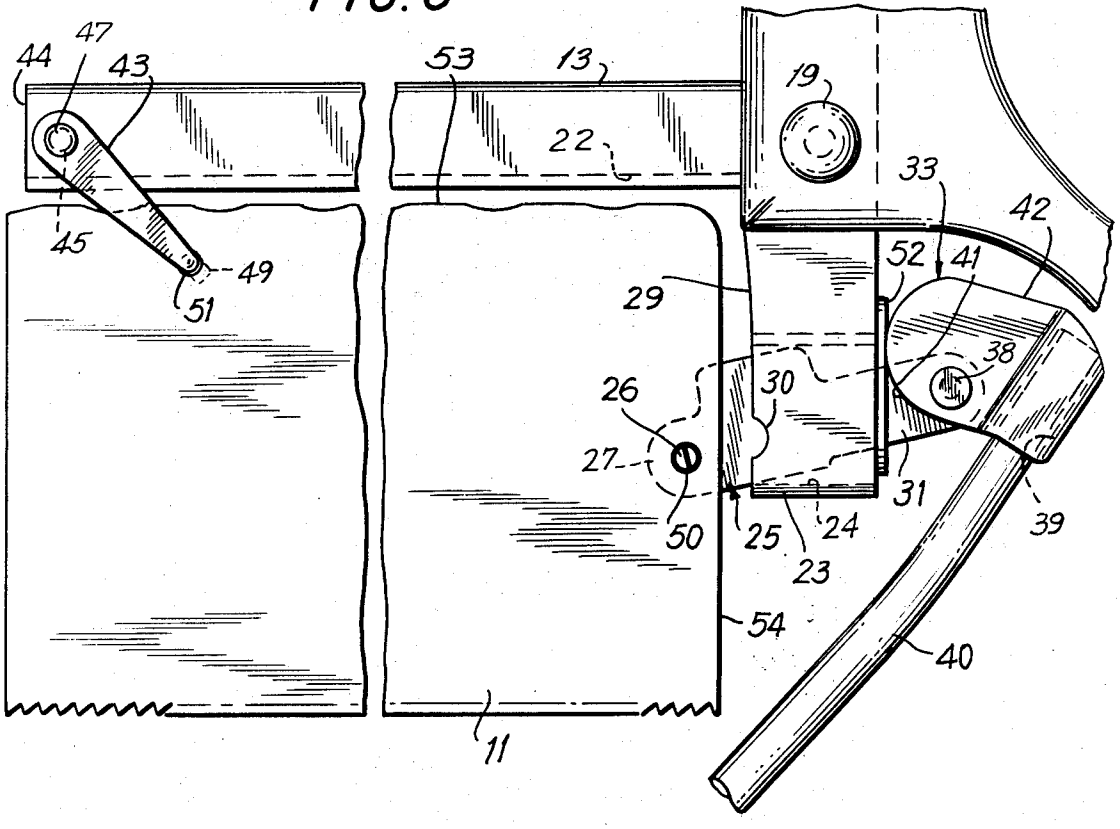


FIG. 6



HAND SAW HAVING DEMOUNTABLE BLADE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is in the field of saws, and more particularly is directed to a hand saw of the type commonly referred to as back saw or meat saw.

2. The Prior Art

In certain types of saws, such as back saws and meat saws, it is conventional to provide a generally rectangular blade, the lowermost longitudinal edge of the blade being provided with saw teeth, the upper edge of the blade having fixed thereto, as by welding, etc., a longitudinally extending, rigidifying rib. Customarily the blade is provided with means, such as a plurality of through holes, adapted to receive complemental, threaded members forming a part of the handle so as to effect a rigid connection between the blade and the handle. When it is desired to sharpen the blade, the saw is typically delivered to the sharpening organization and is thus taken out of service for the duration of the sharpening period.

While it is possible in conventional units of the type described to provide a secondary blade assembly which may like-wise be fixedly secured to the handle, the provision of a second such complete blade assembly involves considerable expense.

Additionally, the operation of opening the conventional attachment means, removing the retainer bolts for the handle, reinserting the handle, reconnecting the bolts, is a time consuming one.

A further factor to be considered is that where the saw is to be used for accurate work, it is imperative that the blade be rigidly mounted, free from any significant tendency toward wobble relative to the handle. In the described conventional saw assemblies, attachment of the handle is effected by clamping pressure exerted on the blade body, the most rigid part of the assembly, namely, the rib, not being directly secured to the handle, thereby introducing an inherent instability.

SUMMARY

The present invention may be summarized as directed to a novel saw and blade assembly of the back saw or meat saw type wherein a flexible, rectangular saw blade may be rapidly connected to and disconnected from the saw frame, the frame including a permanent spine member integral with the handle. The attachment mechanism is constructed and arranged to draw the saw blade upwardly into intimate connection with the spine, with the upward force being essentialy equally applied over the length of the blade, whereby the initially flexible blade is rigidified against transverse bending, and is immovably supported on the handle.

Accordingly, it is an object of the invention to provide an improved saw blade and frame of the back saw type wherein the blade is readily disconnectible from and attachable to the frame.

A further object of the invention is the provision of a saw assembly of the type described wherein the blade itself consists of a flexible steel member free of the typical rigidified spine, with consequent reduced expense as contrasted with blades heretofore known.

Still a further object of the invention is the provision of a saw frame and blade assembly of the type described especially adapted for use in fields where the blade must be frequently sharpened, such as, by way of example, the meat cutting field, professional wood working field and the like.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, reference is made to the accompanying drawings, forming a part thereof, in which:

FIG. 1 is a side elevational view of the saw and blade in accordance with the invention;

FIG. 2 is a bottom plan view of the saw of FIG. 1;

FIG. 3 is a magnified section taken on the angular section line 3—3 of FIG. 1;

FIG. 4 is a magnified horizontal section taken on the line 4—4 of FIG. 1;

FIG. 5 is a magnified vertical section taken on the line 5—5 of FIG. 1;

FIG. 6 is a magnified fragmentary side elevational view showing the position of the parts in the course of assembly and disassembly of the blade.

As conducive to an understanding of the present invention, there is shown in FIG. 1 a saw assembly **10** including a blade member **11**, a handle **12**, a reinforcing rib or spine **13** secured to the handle **12**, and a locking assembly **14** affixed to the handle and actuatable to release and reconnect the blade **11** to the handle.

The spine **13** is preferably integrally formed with a locking bracket **15**, the bracket **15** extending upwardly to the upper edge **16** of the handle. The bracket **15**, as shown in FIG. **5**, is secured in a complemental slot defined by vertically extending flanges **17**, **18** integral with the handle, a series of bolts **19**, extending transversely through aligned apertures **20** in the flanges **17**, **18**, and complemental apertures **21** in the bracket **15**, rigidly to lock the bracket and spine to the handle **12**.

As best seen in FIG. **3**, a V-shaped centering groove **22** is formed on the lower or depending face of the spine **13** for purposes which will become apparent.

As shown in FIGS. **1**, **5** and **6**, the bracket **15** is formed with a lower portion **23** having a through going slot **24** which parallels the rib or spine **13**. A draw bar **25** is slidably mounted within the slot **24**, the clearance between the bar and the slot permitting a degree of tilting as well as axial movement of the bar within the slot.

The draw bar **25** includes a connector finger **26** adjacent its inner end **27**, the finger **26** including an undercut **28** for connection with the saw blade to prevent relative lateral movement between the blade and the finger in the assembled position of the parts. The edge **29** of the bracket **15** may include a recess **30** providing clearance for rearward movement of the finger **26**.

The draw bar **25** includes a tail piece **31** having a transverse aperture **32**. A locking cam **33**, which is generally U-shaped in vertical section, incorporates a spaced pair of legs **34**, **35** having apertures **36**, **37**, respectively, in registry with the aperture **32** of the tail piece **31** of the draw bar. A transversely extending locking rivet **38** passes through the apertures **32**, **36** and **37**, pivotally connecting the locking cam **33** to the draw bar.

As best seen by comparing FIGS. **1** and **6**, the locking cam **33** may be shiftable between locking and releasing positions of the blade, respectively. In order to facilitate the noted movement, the cam member is provided with an enlarged bore **39**, sized to temporarily receive an operating lever **40** adapted to be inserted into the bore **39**. It will be appreciated that the lever is em-

ployed to permit the application of magnified pivotal forces to the cam, facilitating movement between the limiting positions shown in FIGS. 1 and 6. The lever 40 is removed when the saw is used.

The cam 33 includes a curved face 41 which, when the cam is pivoted in an anti-clockwise direction (viewed in the orientation of FIG. 6) progressively pulls the draw bar from left to right, causing the finger 26 to approach bracket 15. When the flat or locking face 42 parallels the bracket 15, as shown in FIG. 1, the saw blade will be in the locked position.

A connection between the saw blade 11 and the frame is effected at a point remote from the bracket 15 by the pivotal mounting lever 43 secured to the spine 13 adjacent the end 44 of the spine furthest from the bracket. The lever 43, as best seen in FIGS. 2, 3 and 6, includes an aperture 45 registering with an aperture 46 in the spine, a rivet 47 extending through the aligned apertures 45, 46, effecting the desired pivotal connection of the parts. The included angle between the lever 43 and the spine portion between the lever and handle is less than 90°, and preferably between 60° and 30°.

The mounting lever 43 includes a mounting leg 48 which extends transversely in alignment with the V-shaped groove 22 on the under surface of the spine 13, the leg 48 terminating in a depending retainer toe 49, which acts to limit lateral movement between the saw blade and lever 43, particularly during intermediate locking stages.

The saw blade 11 is provided with a rear mounting aperture 50, adapted to be engaged by the connector finger 26 of the draw bar and an upper mounting aperture 51 adapted to be secured to the leg 48 of the retainer lever 43.

The saw blade is mounted by first positioning the cam 33 in the open or releasing position through the use of the operating lever 40, as shown in FIG. 6. In the release position of the cam, the finger 26 is shifted away from the face 29 of the bracket 15.

With the cam thus released, the blade 11 is mounted on the leg 48 by tilting the blade, inserting the toe 49 through the aperture 51, and thereafter retilting the blade so that it is in co-planar alignment with the spine 13. Thereafter, the finger 26 is passed through the aperture 50 of the blade and the lever is pivoted from the release position shown in FIG. 6 to the locked position of FIG. 1 with the aid of the removable operator lever 40.

Optionally, one or more shims 52 may be interposed between the locking face 42 of the cam lever assembly and the rear face of the bracket 15.

It is important to note that by reason of the angular relationship between the lever 43 and the blade 11, bodily movements from left to right of the blade 11 by the operation of the cam locking assembly are accompanied by concomitant upward movements of the saw blade 11, such upward movements causing the uppermost edge 53 of the blade, which may be a straight edge or may have a slight sinuous conformation, to be pressed tightly into the centering groove 22 formed on the lower edge of the spine or rib 13.

It will be appreciated that by reason of the tiltability of the draw bar 25 within its mounting slot, an upward movement of the entire blade may be effected, whereby the upward forces resulting from activation of the cam lock are distributed substantially equally along the length of the blade.

The dimensions of the parts are selected such that the shifting of the cam to its locked position does not draw the trailing face 54 of the blade into engagement with the surface 29 of the bracket but, rather, as noted above, the rearward forces exerted on the blade in the course of movement of the cam to the locked position, are translated into forces tending to urge the blade in an upward and rearward direction.

Through the use of a hardened metal cam element and an elongated operating lever 40, the terminal locking movements may be accompanied by a slight stressing or deflection of the frame components, which deflection will operate to maintain the saw blade in its intimate engaged position against the inclined walls of the groove 22 of the spine, assuring a rigid, twist free interconnection of the noted components.

It will be understood that while the cam construction described forms a preferred means of effecting the pulling movement on the saw blade, alternate mechanisms for effecting such action, such as threaded locking mechanisms, etc., may be substituted therefor. A principal contribution of the instant invention is considered to lie in the manner of interconnection of the blade and frame at the end of the blade remote from the handle, whereby an application of forces in the direction of the handle results in the uppermost edge of the blade being urged upwardly into a centering groove formed in the spine, the upward forces being essentially constant along the length of the blade.

It will be appreciated that in order to effect a disconnection of the attached blade, such as for sharpening, the operator lever is simply inserted into the bore 39 of the cam and the mechanism pivoted from the locked position of FIG. 1 to the release position of FIG. 6. In this position the finger 26 may be disengaged from the blade, permitting the blade to be tilted and disengaged from the retainer lever 43.

In this connection is should be noted that not only is the lever 43 pivotable relative to the spine 13 but also the retainer leg 48 is pivotable within the aperture 51 of the saw blade in order to achieve the desired force vectors.

From the foregoing it will be appreciated that the saw apparatus in accordance with the present invention permits rapid mounting and demounting of a saw blade with respect to a saw frame. The connection between the blade and frame is of comparable, if not greater, rigidity than achieved in saws wherein a reinforcing rib forms an integral part of the blade.

The blade is obviously a simpler and less expensive component than that of the integral rib type. By reason of the facile manner with which blades may be mounted and demounted, it is altogether practical to provide, in combination with a single saw frame, a variety of blades having different tooth configurations for effecting different types of cutting operations.

Having thus described the invention and illustrated its use, what is claimed as new and is desired to be secured by Letters Patent is:

1. A saw mechanism for attachment to a replaceable blade comprising, in combination, a handle, a longitudinally elongated spine member extending from said handle, said spine member having a longitudinally extending, depending centering groove, a locking bracket fixed to said handle and extending below said spine, a blade locking assembly on said bracket, said assembly including a draw bar shiftable generally in the direction

of said spine, a mounting lever pivotally secured to said spine in spaced relation to said handle, the included angle between said lever and the portion of said spine extending toward said handle being less than 90°, connecting means formed on said lever in spaced relation to said spine and a blade member mounted to said frame, said blade member including a first pivotal connection with said connecting means of said locking lever, and a second connection with said draw bar, said draw bar exerting a force on said blade, the principal components of which are parallel with said spine and toward said handle, whereby the upper edge of said blade is tightly pressed upwardly into said centering groove.

2. The assembly of claim **1** wherein said draw bar and blade are pivotal relative to each other.

3. The assembly of claim **2** wherein the point of connection between said blade and draw bar is shiftable toward and away from said spine.

4. The assembly in accordance with claim **1** wherein said draw bar is actuated by a cam lock means interposed between said bracket and draw bar assembly, said cam lock means being operable to shift said bar generally in the direction of said bracket.

5. A saw frame for releasibly supporting a generally rectangular saw blade, comprising a handle, an elongated spine extending from said handle, said spine including a longitudinally extending, downwardly directed centering groove, a mounting lever pivotally fixed to said spine in spaced relation to said handle, the included angle between said lever and the portion of said spine extending toward said handle being less than 90°, first connector means on said mounting lever in spaced relation to said spine for pivotal connection to said saw blade, a draw bar mounted on said handle, means for shifting said draw bar longitudinally in the direction of said spine between locking and releasing positions of said blade, said draw bar including second connector means in longitudinal spaced relation to said first connector means, adapted to be pivotally connected to said blade.

6. The assembly of claim **5** wherein said second connector means is shiftable toward and away from said spine.

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