Aug. 7, 1928. 1,680,256

J. F. PRIBNOW

SWAGE SHAPER

Filed July 31, 1924 2 Sheets-Sheet 1

Fig. 1.

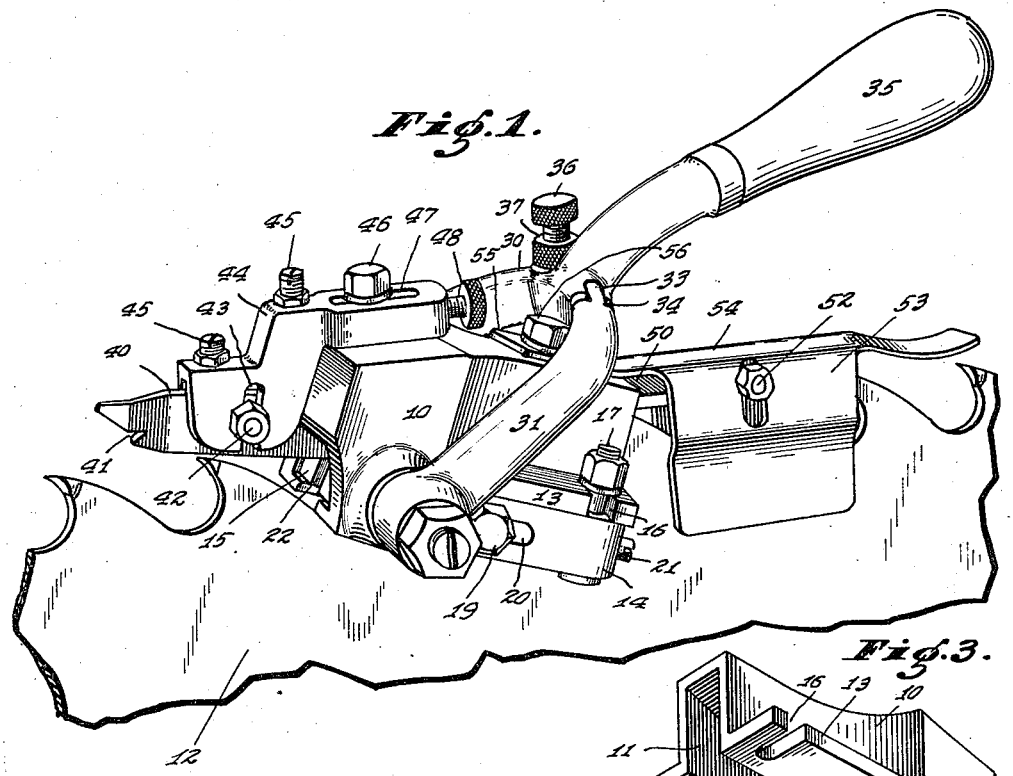


Fig. 3.

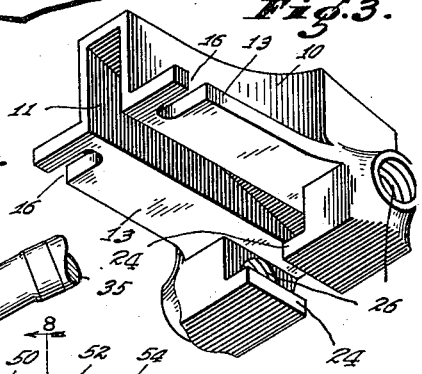
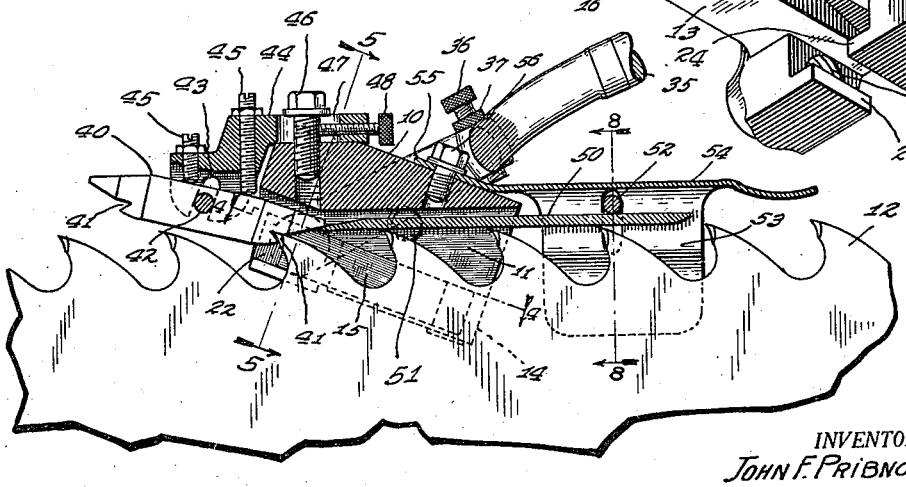


Fig. 2.



INVENTOR.
JOHN F. PRIBNOW,

BY

ATTORNEY.

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Fig. 4.

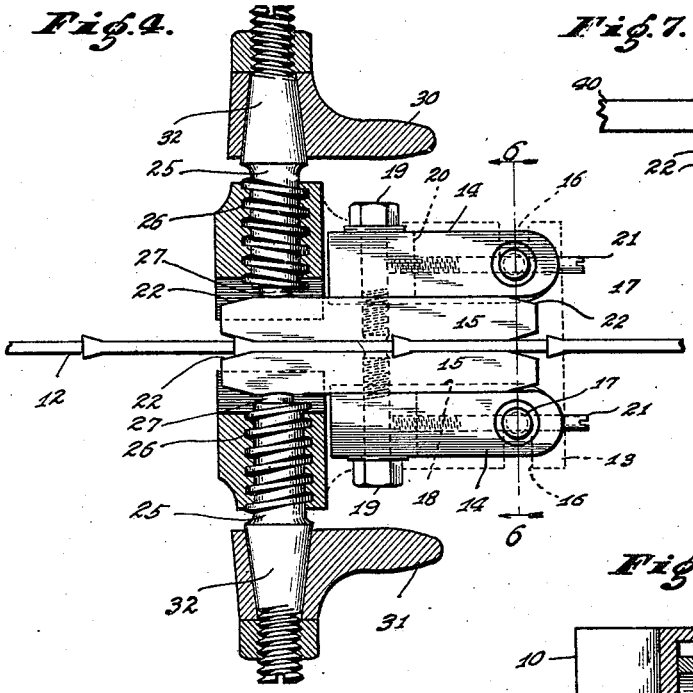


Fig. 7.

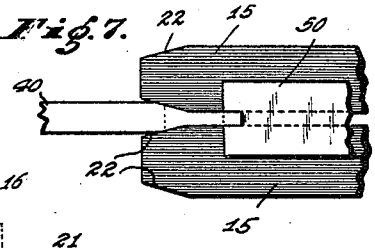


Fig. 6.

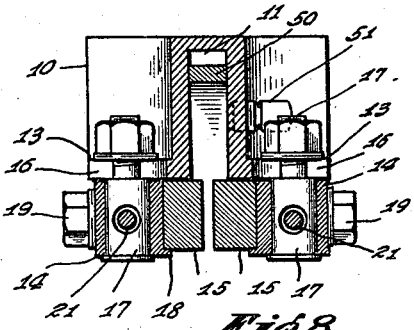


Fig. 5.

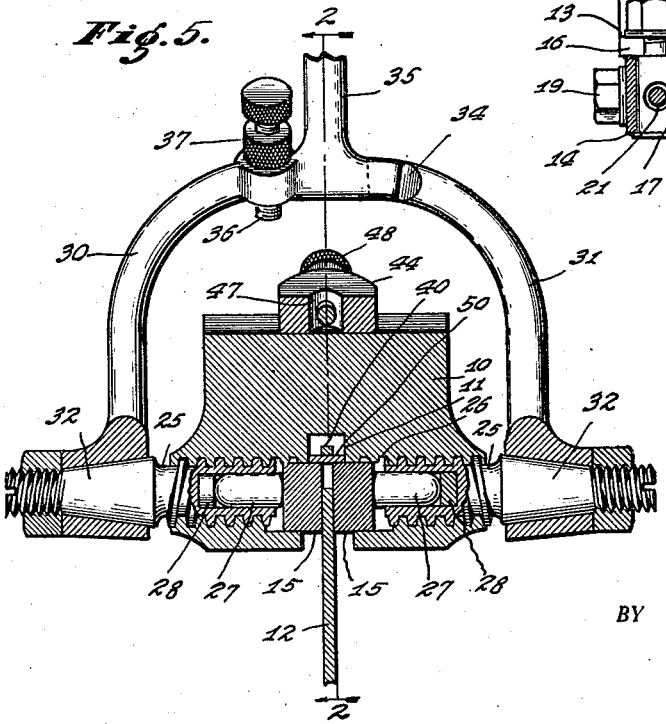
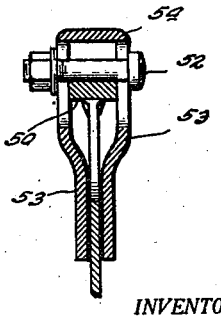


Fig. 8.



INVENTOR.
JOHN F. PRIBNOW,
BY
ATTORNEY.

Patented Aug. 7, 1928. 1,680,256

UNITED STATES PATENT OFFICE.

JOHN F. PRIBNOW, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO E. C. ATKINS & COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION OF INDIANA.

SWAGE SHAPER.

Application filed July 31, 1924. Serial No. 729,214.

It is the object of my invention to produce an improved saw shaper, which can be operated with a minimum of labor, can have its parts put in place or taken out with little effort and without disturbing other parts, can be readily adjusted by simple means to limit the closing movement of the shaper jaws, operates to move both jaws in the shaper body and to do so by a simple mechanism by a single operating arm, and has effective and readily adjustable and interchangeable positioning means for locating the shaper in proper position on the saw teeth.

I accomplish these results by the shaper construction illustrated in the accompanying drawings, which show a preferred embodiment of my invention.

In such drawings, Fig. 1 is a perspective view of a shaper embodying my invention, in position on a fragment of a saw; Fig. 2 is a longitudinal central section through such shaper, on the line 2—2 of Fig. 5; Fig. 3 is a perspective view of the shaper body; Fig. 4 is an oblique section substantially on the line 4—4 of Fig. 2, but with the saw shown in full, and with the tooth-stop removed; Fig. 5 is a transverse section substantially on the line 5—5 of Fig. 2; Fig. 6 is a transverse section on the line 6—6 of Fig. 4; Fig. 7 is an enlarged fragmental plan view of the overlapping portions of the tooth-stop and positioning plate, with fragments of the shaper jaws below; and Fig. 8 is a transverse section on the line 8—8 of Fig. 2.

The shaper body 10 has an oblique-topped central longitudinal groove 11 open at the bottom to permit the shaper body to be set astride a saw 12. Two horizontal flanges 13 project oppositely from the body 10, away from the slot 11, to constitute supporting abutments for the upper faces of the jaw carriers 14 and the shaper jaws 15 carried thereby. Near their rear ends, the flanges 13 have transverse slots 16, desirably open to the outer edges of such flanges, for receiving shouldered pivot bolts 17 by which the jaw carriers are pivotally supported at their rear ends from the flanges 13. By having the slots 16 open at their outer ends, either jaw carrier with its shaper jaw can readily be removed, without disturbing the other parts.

Each shaper jaw 15 lies against the inner face of its jaw carrier 14, with its lower face resting on a narrow shoulder flange 18 provided on the jaw carrier for positioning the jaw; and is held firmly against the jaw carrier by a clamping bolt 19 projecting into a threaded transverse hole in the jaw through a longitudinal slot 20 provided in the jaw carrier and opening to the forward end thereof. By loosening the clamping bolt 19, the jaw may be adjusted longitudinally of the jaw carrier by an adjusting screw 21 extending longitudinally of said jaw carrier from the rear thereof into engagement with the clamping bolt 19. The open slot 20 permits the ready removal of a jaw from its jaw carrier, and the association of the jaw with the jaw carrier in four different positions of the former, so that any of the four oblique working faces 22 of the jaw may be made the operative face.

The forward ends of the shaper jaws 15 rest slidingly on shelves 24 of the shaper body 10, and may be moved toward each other by operating screws 25 mounted in transverse threaded holes 26 in such shaper body. One screw 25 is right-handed and the other left-handed, so that their adjacent ends approach each other by the turning of the two screws in the same direction. To minimize friction, the adjacent ends of the screws 25 are counter-bored to receive hardened-steel pins 27, which project beyond the ends of the screws and bear against the adjacent faces of the jaws 15. The pins 27 desirably have reduced bearing surfaces at their ends within the screws 25, for reducing friction, as by having those ends rounded off hemispherically; and these reduced ends may bear against blocks 28 set in the bottoms of the holes in the screws 25. By this arrangement, as the pressure increases between the pins 27 and the jaws 15, the pins 27 may stop turning while the screws 25 proper still continue to be turned; which reduces friction between the pins and the jaws, and so lessens labor.

The outer ends of the screws 25 have operating arms 30 and 31 suitably attached thereto; as by tapered mountings 32. The two arms 30 and 31 are separate, so that they may move relatively to each other parallel to the axis of the screws 25. They are arranged to be rotated together, however, while permitting said relative axial movement. To this end, the arm 30 extends over

the body 10 rather past the middle thereof, and is there provided with an open-ended slot 33 which receives a projecting finger 34 from the incurving end of the arm 31. The arm 30 is provided with a projecting operating handle 35, conveniently in the plane of the saw 12. By the swinging of such operating handle 35 and by the tongue-and-slot connection 33—34, the two arms 30 and 31 may be turned correspondingly, and yet permitted to advance toward and recede from each other as the screws 25 turn to advance toward or recede from the plane of the saw 12. This tongue-and-groove connection 33—34 permits either arm 30 or 31 to be removed without disturbing the other, and without requiring the release of any locking means between the two arms; which facilitates the removal and replacement of the screws 25 and the removal and replacement of the pins 27 in such screws.

One of the arms 30 and 31, and desirably the arm 30, is provided near the point where the handle 35 branches therefrom with a stop-screw 36, arranged in position to engage the top of the shaper body 10 (or some part rigid therewith) and thus to limit the saw-approaching movement of the two screws 25. The stop-screw 36 may be adjusted to suit conditions, and locked into adjusted position by a suitable lock-nut 37.

To set the shaper in proper position with respect to the saw tooth being operated on, I provide a tooth-stop 40, which is desirably reversible end-for-end, with the two ends differently shaped if desired. Each end of this tooth-stop is shaped, however, to fit between the working ends of the two shaper jaws 15, and has a stop-notch 41 for fitting upon the point of the tooth to be shaped, to locate such tooth in desired relation to such jaws. This tooth-stop 40 is supported by a transverse clamping bolt 42 received in downwardly opening slots 43 in downwardly projecting flanges located on the two sides of the tooth-stop 40 and projecting from a stop-support 44 adjustably mounted upon the top of the shaper body 10. The stop-support 44 has downwardly extending adjusting screws 45 which bear upon the upper face of the tooth-stop 40 on opposite sides of the clamping bolt 42 which supports said tooth-stop; so that by adjusting said screws 45 it is possible to adjust both the height and the angle of the tooth-stop with respect to the shaper body 10. By this adjustment, the tooth-stop may be made to fit different shapes of teeth; and the teeth may be made to co-operate with different parts of the operative surfaces of the jaws to produce more uniform wear.

The stop-support 44 lies upon the shaper body 10, and is clamped thereto by a clamping screw 46. Such clamping screw extends through a longitudinal slot 47 in the supporting end of the stop-support 44, to permit longitudinal adjustment of said stop-support and the tooth-stop carried thereby with respect to the shaper body 10. This adjustment may be set exactly by an adjusting screw 48, which also serves to prevent the stop-support 44 from slipping on the shaper body 10 under the stress of use.

To assist in holding the shaper body 10 in proper position on the saw, and to facilitate shifting the shaper from one saw-tooth to the next without danger of having the teeth catch on the point of the tooth-stop, I provide a positioning plate 50, which projects into the slot 11 from the rear. The forward end of the positioning plate 50 is desirably transversely chamfered at the top, so that it may smoothly underlie the inner end of the tooth-stop 40, as is clear from Figs. 2 and 7. This permits sliding the shaper along the saw from one tooth to the next without having the teeth catch on the point of the tooth-stop. The positioning plate 50 is of proper width to fit rather snugly in the slot 11. The forward end of the positioning plate may be clamped in adjusted position by a set-screw 51 projecting against its edge through the side of the shaper body 10. The upper face of the rear end of the positioning plate 50 bears against a transverse abutment bolt 52 adjustable in vertical slots in depending flanges 53 of a saw-guide 54 supported from the shaper body 10 and projecting rearward therefrom. The two depending flanges 53 approach each other at their lower ends, to co-operate loosely with the side face of the saw to guide the shaper thereon. The saw guide has a forwardly projecting supporting finger 55 by which it is attached to the top of the shaper body by a clamping screw 56. The stop-screw 36 may directly abut against this supporting finger 55.

The shaper may be operated very rapidly. It is set on the saw as indicated in Figs. 1 and 2, with a saw tooth in the notch 41 in the inner end of the tooth-stop 40. The tooth-stop is properly adjusted by the screws 45 and 48 to hold the saw tooth being operated on in desired relation to the shaper jaws 15, which in turn have been properly adjusted to their desired positions in the jaw carriers 14 by adjustment of the screws 21. The positioning plate 50 is also adjusted to desired position, with its forward end underlying the rear end of the tooth-stop, and is clamped in adjusted position by the screws 51 and 52. The stop-screw 36 is set properly to limit the swinging movement of the handle 35.

When these adjustments have been properly made, and the various clamping screws all tightened, the shaper is set successively on the different teeth of the saw, and at each tooth the handle is swung clockwise (Figs.

1 and 2) as far as the stop-screw 36 permits. This turns the screws 25 to approach each other, and thus forces the working end of the jaws 15 toward each other to shape the sides of the tooth being operated on. As soon as the stop-screw 36 strikes the shaper body (or the finger 55), the handle 35 may be swung back to release the shaper; whereupon the shaper is shifted forward to the next tooth, and the operation repeated. As the shaper is shifted from one tooth to the next, the positioning plate 50 effectively prevents the teeth from catching on the point of the tooth-stop. All this may be done very rapidly, and with relatively easy labor. The saw guide 54 serves as a convenient grip by which the shaper may be slid along the saw from tooth to tooth, and also effectively protects the operator's hands from the saw teeth.

I claim as my invention:

1. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other into and out of engagement with the sides of the saw tooth which is to be shaped, a screw for producing such relative movement, and a thrust pin rotatably mounted in said screw and acting on a shaper jaw.

2. In a saw shaper, the combination set forth in claim 1, with the addition that said pin has a friction-reducing thrust bearing in said screw.

3. In a saw shaper, the combination of a shaper body, a pair of shaper jaws movably mounted in said body and movable relatively to each other into and out of engagement with the sides of the saw tooth which is to be shaped, a screw for each jaw for moving it in said body, and a thrust pin rotatably mounted in each screw and acting on the associated shaper jaw.

4. In a saw shaper, the combination set forth in claim 3, with the addition that each thrust pin has a friction-reducing thrust bearing in its screw.

5. In a saw shaper, the combination of a shaper body, a pair of shaper jaws movably mounted in said body and movable relatively to each other, a pair of screws of opposite pitch for moving the two jaws in said body, and operating arms for the respective screws, said two operating arms having portions which project toward each other and interengage with a tongue-and-slot connection, one of said arms including an operating handle.

6. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a tooth-stop mounted on said shaper body, and a positioning plate co-operating with said tooth-stop to prevent teeth of the saw from catching on the point of the tooth-stop when the shaper is being shifted from one saw tooth to another, said positioning plate being vertically adjustable relative to said shaper body and to said tooth stop.

7. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a tooth-stop mounted on said shaper body, and a positioning plate mounted in said shaper body across the saw plane in position to engage a plurality of saw teeth, said positioning plate being vertically adjustable relative to said shaper body and to said tooth stop.

8. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a tooth-stop mounted on said shaper body, a saw-guide projecting rearward from the shaper body and having depending flanges for projecting down at the sides of the saw, and a positioning plate mounted between said flanges and co-operating with said tooth-stop.

9. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a stop-support mounted on and projecting forward from said shaper body, and a tooth stop reversibly mounted in said stop-support, said tooth stop being vertically adjustable in said stop support.

10. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a stop-support mounted on said shaper body and having depending flanges, a tooth-stop mounted between said flanges, and screws for vertically adjusting said tooth stop between said flanges.

11. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a stop-support mounted on said shaper body and having depending flanges, a tooth-stop mounted between said flanges, a transverse clamping screw for clamping said tooth-stop between said flanges, and adjusting screws acting on said tooth-stop on opposite sides of said transverse clamping screw.

12. In a saw shaper, the combination of a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a stop-support mounted on said shaper body and having depending flanges, a tooth-stop mounted between said flanges, a transverse clamping screw for clamping said tooth-stop between said flanges, and adjusting screws acting on said tooth-stop on opposite sides of said transverse clamping screw, said flanges having slots which receive said clamping screw and are transverse to the plane in which said shaper jaws are relatively movable.

13. In a saw shaper, the combination of

a shaper body, a pair of shaper jaws mounted therein and movable relatively to each other, a stop-support mounted on said shaper body and having depending flanges, and a tooth-stop mounted between said flanges, said stop-support being adjustable on said shaper body and said tooth-stop being vertically adjustable in said stop-support.

In witness whereof, I have hereunto set my hand at Indianapolis, Indiana, this 29th day of July, A. D. one thousand nine hundred and twenty-four.

JOHN F. PRIBNOW.