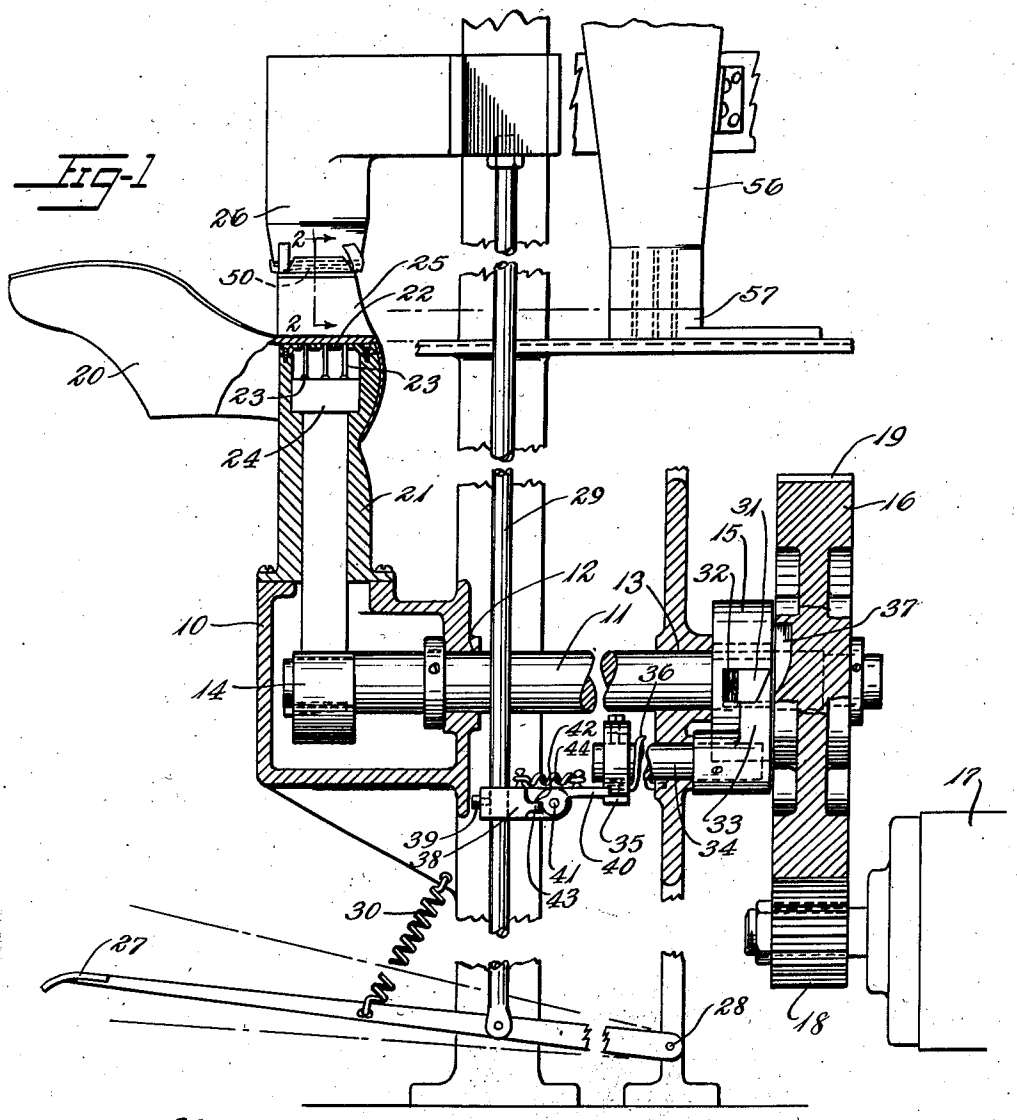
Dec. 29, 1942. C. M. DE WOLFE 2,306,530

HEEL NAILING MACHINE

Filed July 23, 1941

Fig-1



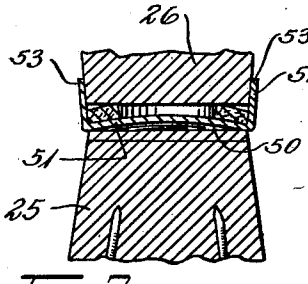


Fig-2

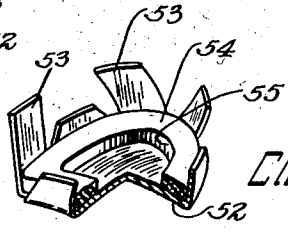


Fig-3

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HEEL NAILING MACHINE

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8 Claims. (Cl. 1—32)

This invention relates to heel-nailing machines such as are utilized for attaching wooden heels to shoes.

Heretofore in the use of nailing machines for securing wooden heels to shoes many of the heels have been split during the nailing operation, requiring the removal and replacement of the damaged heels with considerable labor.

The principal objects of the present invention are to reduce the number of heels split during application, to provide uniform support to the heel during the nailing operation, to provide cushioning of the anvil, and to provide for quick replacement of the anvil face.

These and other objects will appear from the following description and the accompanying drawing.

Of the drawing:

Fig. 1 is a sectional elevation of a nailing machine embodying the invention.

Fig. 2 is a sectional detail view of the anvil and a heel supported thereby.

Fig. 3 is a perspective view of a removable anvil face, partly broken away and partly in section.

In accordance with the invention the anvil of the nailing machine is provided with a concave and preferably roughened face adapted to bear against the tread face of the heel and to support the heel from the margin thereof to resist outwardly directed forces, and to prevent slipping of the heel during the nail driving operation. In its preferred form the anvil face is removable and is backed by cushioning material.

Referring to the drawing, and first to a type of machine with which my invention may be advantageously used, the numeral **10** designates the frame of a nailing machine in which a horizontally disposed shaft **11** is journaled, as at **12**, **13**. The shaft has a hammer cam **14** fixed to one end thereof, and a one-revolution clutch member **15** fixed to its other end on which a fly-wheel **16** is journaled. A motor **17** drives the fly-wheel continuously through a pinion **18** fixed to the motor shaft and engaging gear teeth **19** on the fly-wheel. A shoe **20** is supported from the frame **10** by a hammer guide **21** the upper end of which supports a nail guide plate **22** which guides the nails **23** supported on a hammer **24** slidable vertically through the hammer guide. The nails may be fed to the nail-guide plate **22** from a hopper **56** by means of a transport plate **57**.

To hold the heel **25** in place against the driving face, an anvil **26** is slidably mounted on the frame **10** for vertical movement. A treadle **27** is pivoted at **28** to the frame, and a link **29** connects the treadle and the anvil. The treadle is supported by an extension coil spring **30** but may be depressed to force the anvil against the heel.

The clutch member **15** is slotted to receive a dog **31** slidably fitted therein. The dog is forced toward the fly-wheel by a spring **32** but is restrained by a latch **33** fixed to a rock shaft **34**. An arm **35** is fixed to shaft **34** and a torsion coil spring **36** having its ends fixed to the arm **35** and the frame **10** respectively holds the latch in latching position where it is in the path of rotation of the dog **31** and acts to hold it out of engagement with notches **37** in the fly-wheel. A stop **38** is adjustably mounted on rod **29** where it is held by a set-screw **39**. A pawl **40** is pivoted at **41** on the stop **38**, and extends in the path of the arm **35**. A shoulder **42** on the pawl normally engages a shoulder **43** on the stop **38** which prevents its rotation in a counterclockwise direction. A coil spring **44** extending between stop **38** and arm **40** holds the pawl in the position shown but permits rotation thereof in a clockwise direction. The arrangement is such that when rod **29** is lowered by pedal **27**, pawl **40** rocks arm **35** about shaft **34** engaging the clutch, and when pedal **27** is released, spring **44** permits the pawl to pass arm **35** and resets the clutch engaging mechanism. As a result, when the anvil **26** is lowered to a position to clamp the heel against the shoe, the clutch is automatically engaged and hammer **24** drives the nails by consecutive blows until the foot pedal is released.

In accordance with my invention, to prevent slipping of the heel during the nail-driving operation, the anvil **26** is formed with a concave face **50** of greater spread than the tread face of the heel, as shown, adapted to contact the outer periphery of the tread face of the heel, and this face may be roughened as at **51**, by knurling or the like, to prevent slippage. Where the anvil **26** has a flat face such as is ordinarily provided on such machines, a removable anvil face **52** may be provided. Such a removable face may be formed of sheet metal to provide the concave roughened face **50** and, has integral retaining tabs **53** at its outer periphery. It is desirable to cushion the removable face somewhat from the anvil to equalize pressure against the heel and for this purpose a washer **54** of vulcanized fiber or other tough hard cushioning material having the form of the heel face and centrally apertured, as at **55**, may be placed between the anvil and its removable face.

The operation of the apparatus is as follows: After the nails have been placed over the ham-

mer 24 by the nail-placing mechanism of the machine, a shoe is placed over the hammer guide as shown in Fig. 1, and a heel is placed over the heel-seat of the shoe. The operator then depresses the treadle 27 which lowers the anvil 26 into contact with the heel. At the instant of contact, the clutch is engaged by the treadle and drives the hammer, forcing the nails into place. The concave face of the anvil acts to apply inwardly directed pressure against the wood heel and the roughened face prevents slipping so that splitting of the heels is greatly reduced. After the nails are driven home, the treadle 27 is released. This throws out the clutch and the spring 30 raises the anvil from the work so that the shoe can be removed.

Variations may be made without departing from the scope of the invention as it is defined by the following claims.

I claim:

1. In heel-nailing apparatus in which a hammer-guide is adapted to support a shoe and a hammer is slidably operable therein for driving nails, an anvil adapted to support the relatively flat tread face of the heel against the driving forces, said anvil having a concave face of greater spread than the tread face of the heel for supporting and bearing against the tread face of the heel by contact with the margin of the latter and without initial contact at the intermediate region of the tread face.

2. In heel-nailing apparatus in which a hammer-guide is adapted to support a shoe and a hammer is slidably operable therein for driving nails, an anvil adapted to support the tread face of the heel against the driving forces, said anvil having a concave face for supporting and bearing against the heel by contact with the margin of the latter and an element of cushioning material between said face and the body of the anvil.

3. In heel-nailing apparatus in which a hammer-guide is adapted to support a shoe and a hammer slidably operable therein for driving nails, an anvil adapted to support the tread face of the heel against the driving forces, said anvil having a roughened face of greater spread than the tread face of the heel engageable only with the peripheral margin of the heel.

4. In heel-nailing apparatus in which a hammer-guide is adapted to support a shoe and a hammer slidably operable therein for driving nails, an anvil adapted to support the relatively flat tread face of the heel against the driving forces, said anvil having a concave face member of greater spread than the tread face of the heel engageable with the margin of the heel without initial contact at the intermediate region of the tread face, and means for detachably securing said member to said anvil.

5. In heel-nailing apparatus in which a hammer-guide is adapted to support a shoe and a hammer is slidably operable therein for driving nails, an anvil adapted to support the relatively flat tread face of the heel against the driving forces, said anvil having a removable concave face of greater spread than the tread face of the heel having a knurled surface adapted to prevent slippage of the heel and to engage the margin of the tread face without initial contact at the intermediate region of the tread face.

6. In heel-nailing apparatus in which a hammer-guide is adapted to support a shoe and a hammer slidably operable therein for driving nails, an anvil adapted to support the tread face of the heel against the driving forces, said anvil having a removable concave face having a knurled surface adapted to prevent slippage of the heel and to engage its perimeter, and cushion means for resiliently supporting said removable face.

7. An anvil for engaging the relatively flat tread face of a heel to support the same against the forces of driving nails, said anvil comprising a plate member having a concave face of greater spread than the tread face of the heel for engaging only the margin of the tread face of the heel, and projecting elements extending from the periphery of said plate member for detachably securing the member to the body of the anvil.

8. An anvil as defined in claim 7 comprising a cushion member at the back of said plate member adjacent said projecting elements.

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