E. N. CHILDS.

HORSESHOE CALK FORMER.

APPLICATION FILED JAN. 13, 1908.

940,235.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 1.

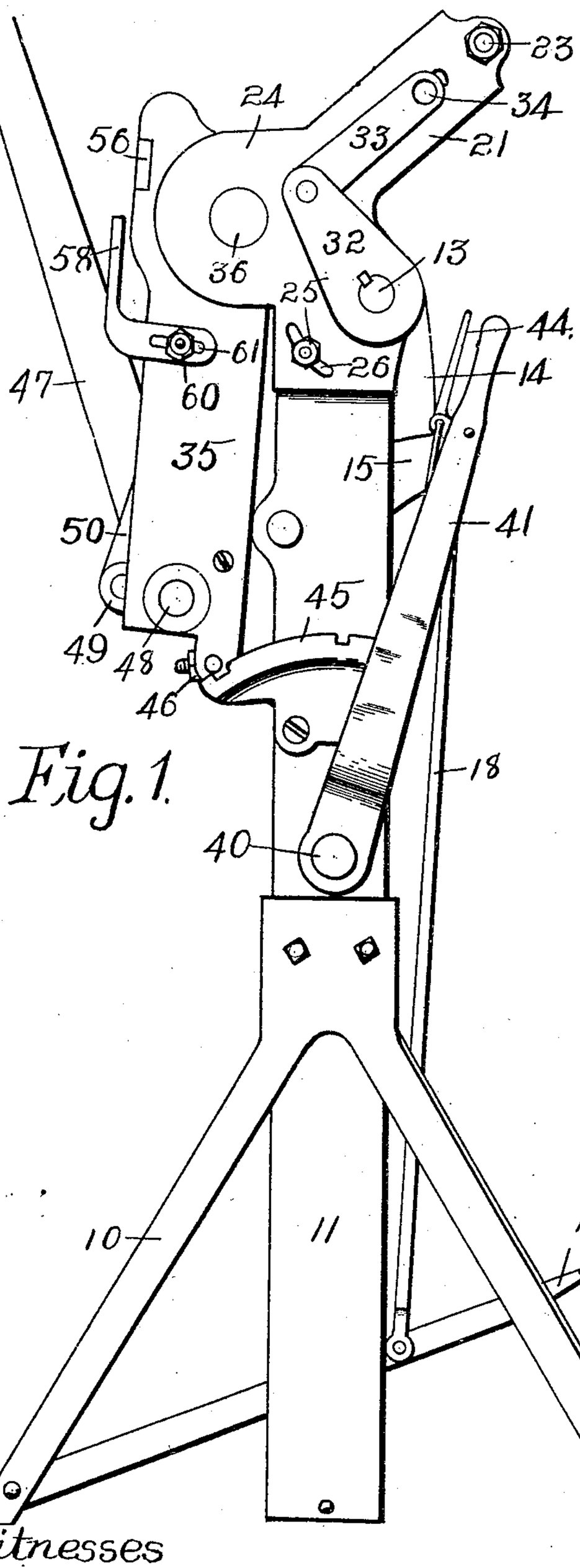


Fig. 1.

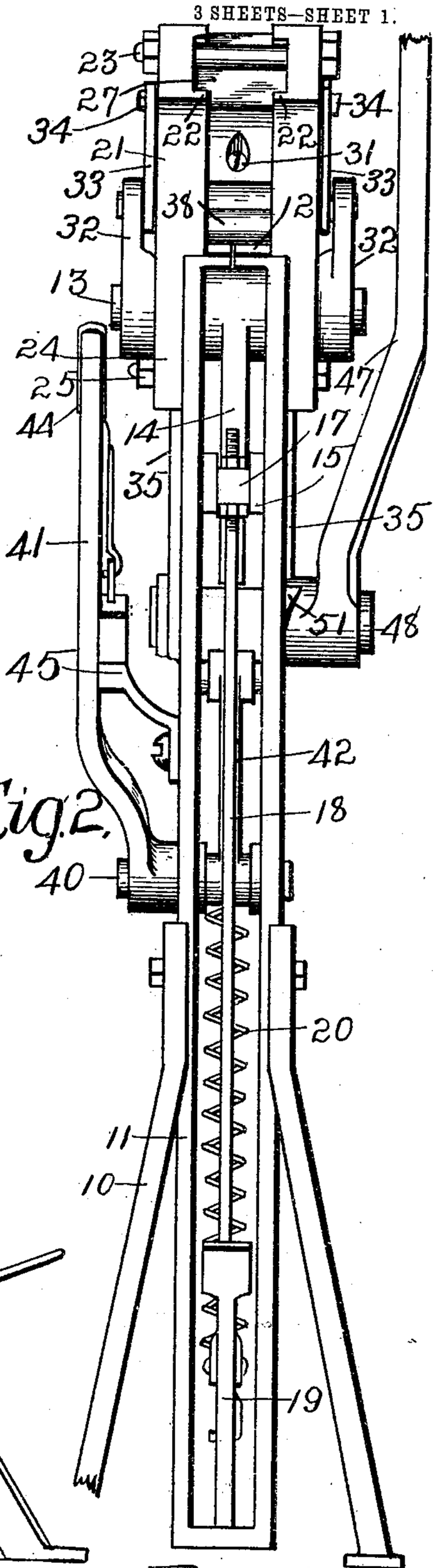


Fig. 2.

Witnesses

A. G. Hague.

F. C. Dahlberg.

Inventor

E. N. Childs

by Owen & Lane attys

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

E. N. CHILDS.

HORSESHOE CALK FORMER.

APPLICATION FILED JAN. 13, 1908.

940,235.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 2.

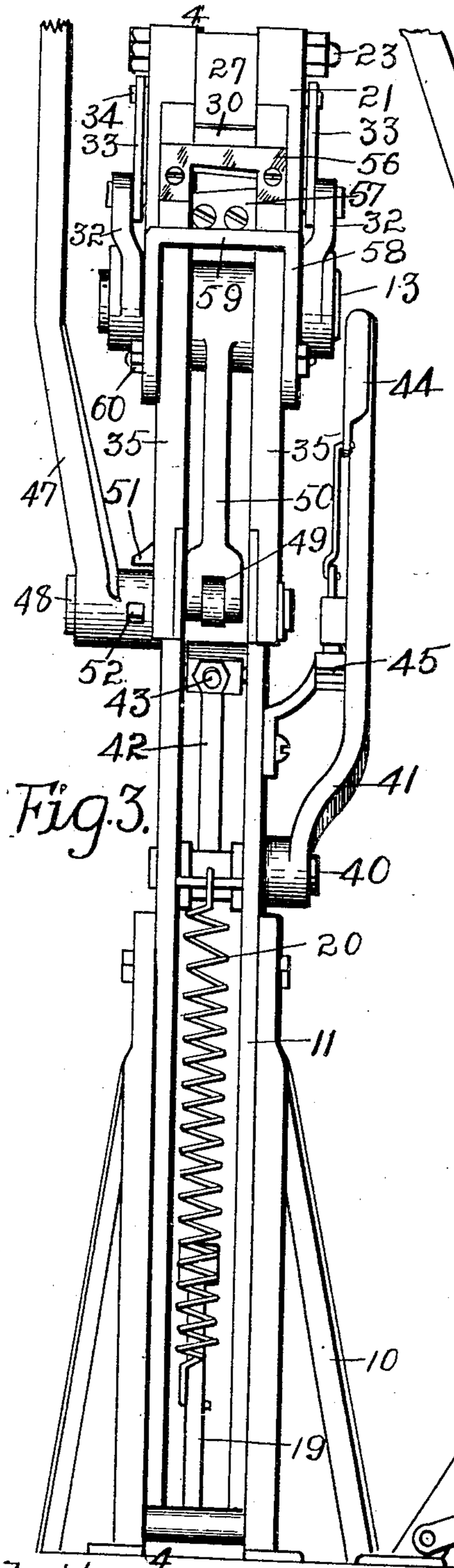


Fig. 3.

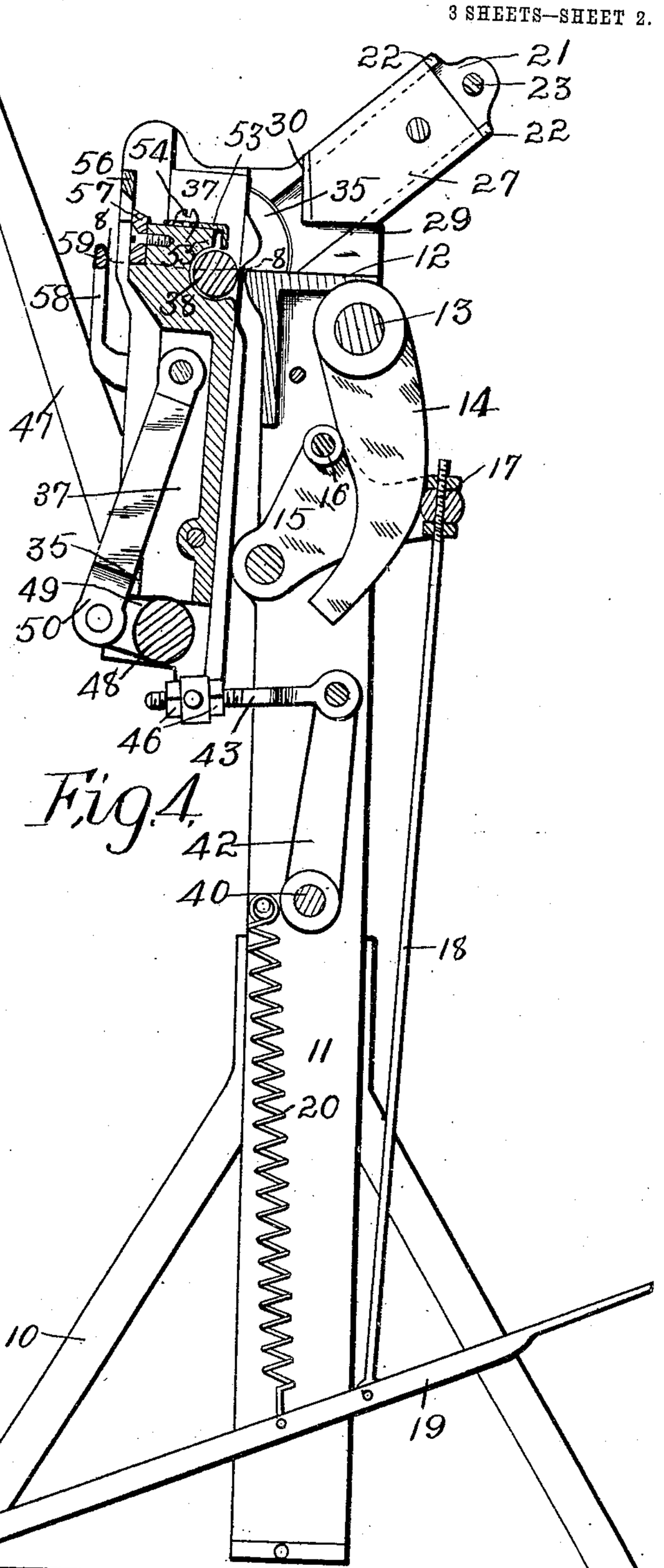


Fig. 4.

Witnesses

A. G. Hague

F. C. Dahlberg.

Inventor

E. N. Childs

by Orwig & Lane attys

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

E. N. CHILDS.

HORSESHOE CALK FORMER.

APPLICATION FILED JAN. 13, 1908.

940,235.

Patented Nov. 16, 1909.

3 SHEETS—SHEET 3.

Fig. 5.

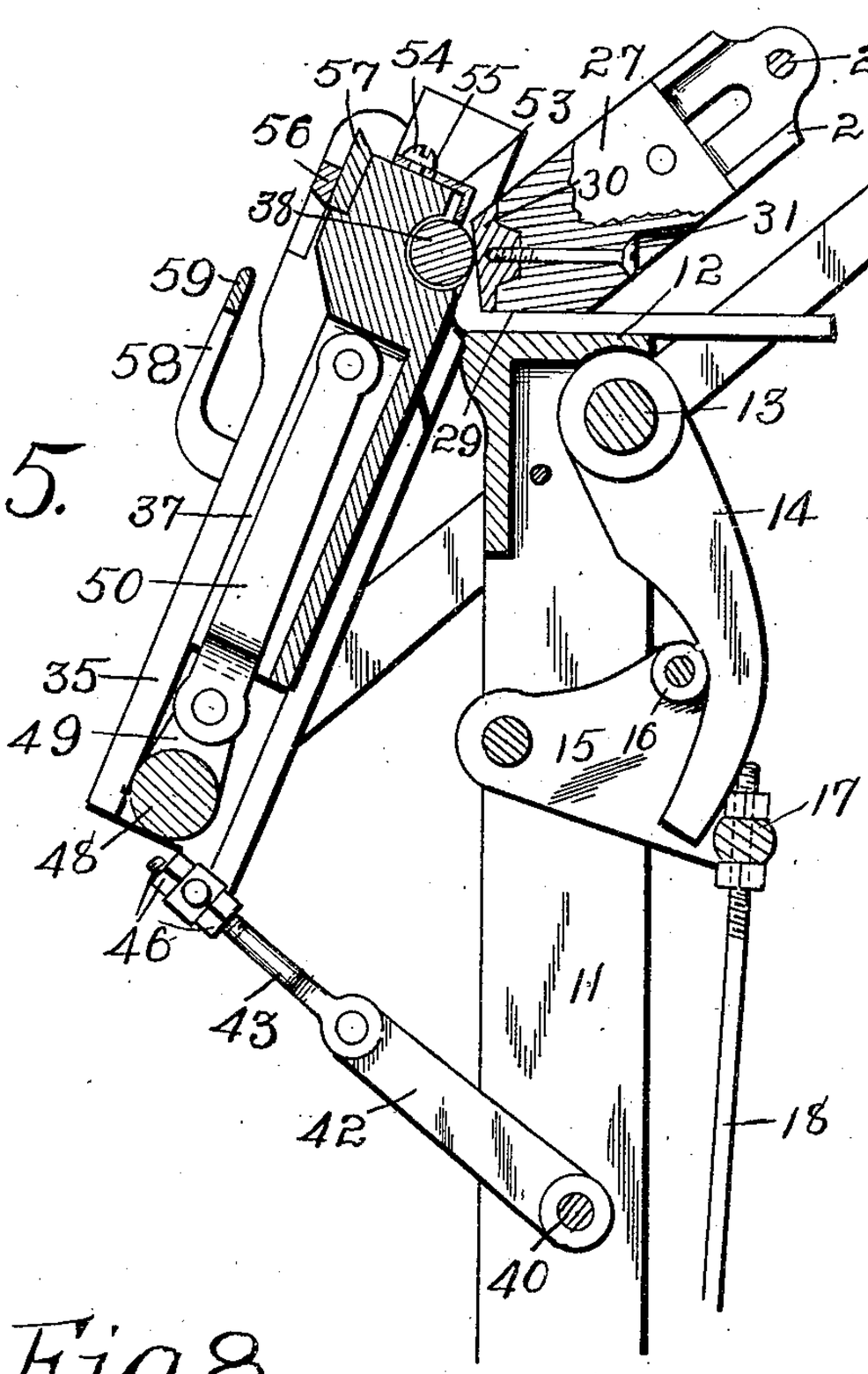


Fig. 6.

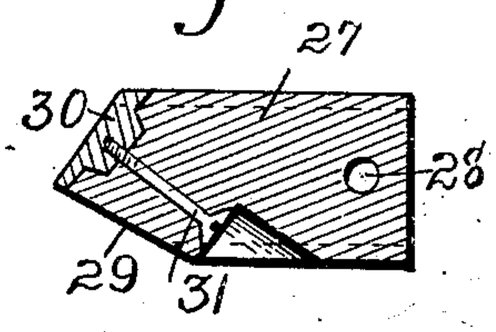


Fig. 7.

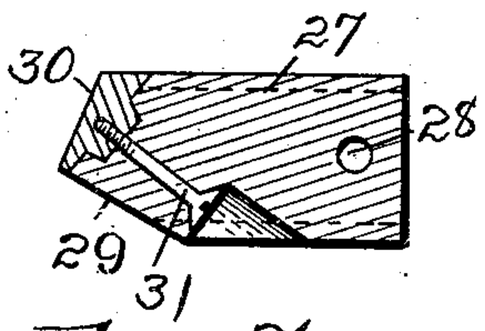
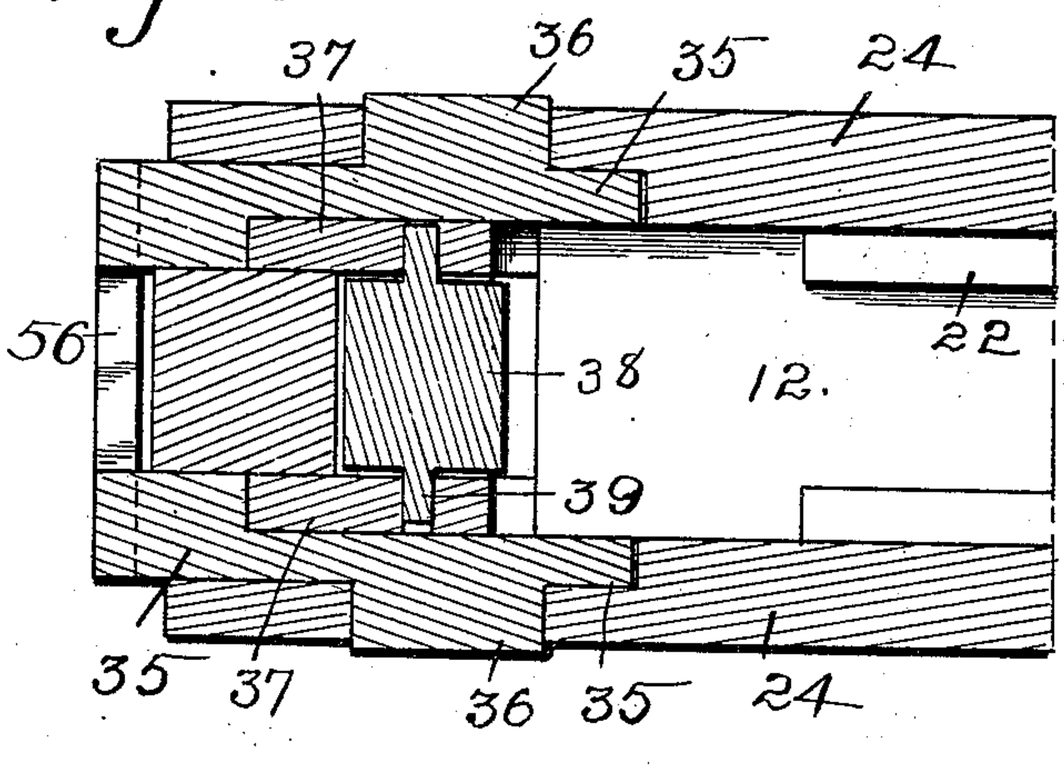


Fig. 8.



Witnesses.
A. G. Hague
F. C. Dahlberg.

Inventor
E. N. Childs.
by Orwig & Lane attys

UNITED STATES PATENT OFFICE.

ELMER N. CHILDS, OF PERRY, IOWA, ASSIGNOR TO AMERICAN CALKING MACHINE COMPANY, OF PERRY, IOWA, A CORPORATION OF IOWA.

HORSESHOE-CALK FORMER.

940,235. Specification of Letters Patent. **Patented Nov. 16, 1909.**

Application filed January 13, 1908. Serial No. 410,501.

To all whom it may concern:

Be it known that I, ELMER N. CHILDS, a citizen of the United States, residing at Perry, in the county of Dallas and State of Iowa, have invented a certain new and useful Horseshoe-Calk Former, of which the following is a specification.

The object of my invention is to provide a device of the class described, of simple, durable and inexpensive construction.

More specifically it is my object to provide a device of this class in which a previously heated horse shoe may be placed by the operator, and a calk formed on the heel thereof by the manipulation of a single lever, and either a blunt or a sharpened calk may be made quickly and easily, and with a minimum of applied power by the operator.

A further object is to provide means whereby the device may be quickly and easily adjusted so that it will form calks either blunt or at any desired taper, to suit the requirements of the operator.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of the complete device embodying my invention. Fig. 2 shows a rear edge view of same. Fig. 3 shows a front edge view of same. Fig. 4 shows a vertical sectional view on the line 4—4 of Fig. 3. Fig. 5 shows an enlarged detail view of the upper portion of the device, along the same line as that on which Fig. 4 is taken, showing the various parts in adjusted positions. Fig. 6 shows a detail sectional view of the swage-block. Fig. 7 shows a similar view with a modified form of face block applied thereto, and—Fig. 8 shows an enlarged detail sectional view on the line 8—8 of Fig. 4.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate the base of the device. Fixed to said base are two parallel uprights 11 having at their tops a flat face block 12. Mounted beneath the block 12 near the top of the uprights, and adjacent to the rear side thereof is a shaft 13 having fixed thereto a cam 14. This cam is designed to be operated by means of a lever 15 pivoted between the uprights 11 and provided with a roller 16 to engage the cam. It is also provided with a cross piece 17 to engage the rear surface of the cam.

The lever 15 is operated by means of a rod 18 adjustably connected with the lever 15 and attached to a foot lever 19, which lever is fulcrumed to the standard 10 and is normally held in an elevated position by means of a spring 20. The said shaft 13 is designed for the purpose of moving a swage block hereinafter described.

Pivotally supported upon the shaft 13 are two mating brackets 21. These brackets are provided with upwardly and rearwardly extended portions forming swage block guides, and they are provided with ribs 22 guiding the swage block. These ribs are clearly shown in Fig. 2.

The outer ends of the brackets 21 are connected by means of a bolt 23, which forms a stop for limiting the upward movement of the swage block.

Projecting from the forward edges of the brackets 21 are the lugs 24 for purposes hereinafter made clear. These brackets are adjustably clamped to the uprights 11 and passed through the segmental slots 26 in the brackets. The swage block which is shown in detail in Fig. 6 comprises a body portion 27 having its sides shaped to fit between the ribs 22 as shown in Fig. 2, and provided with an opening 28 at its upper end. Its lower end is provided with a flat face 29 designed to stand substantially parallel with the block 12, and its front face is arranged substantially vertical, and it is provided with a recess to receive a face block.

The face block comprises a body portion 30 shaped to fit into the recess to prevent it from turning relative to the swage block. I have provided for detachably supporting the face block by means of a screw 31 passed through the swage block from the rear, and seated in the face block.

In Fig. 7 of the drawings I have shown a face block of modified form in which the working face thereof is arranged on a different angle from the one shown in Fig. 6, and the advantage of this will be hereinafter more particularly described.

I have provided for moving the swage block toward and from the block 12 by means of the cranks 32 keyed to the shaft 13 and connected with links 33 attached to a bar 34, which bar extends through the opening 28 in the swage block. By this arrangement, the operator may by placing his foot upon the foot lever 18 force the swage block down toward the block 12 and when pressure on the foot lever 19 is released, the spring 20 will elevate the swage block until it strikes the bolt 23. By manipulating the bolts 25, the operator may obviously vary the angle of the swage blocks, the advantage of which will be hereinafter made clear.

The swage block is provided for the purpose of clamping a shoe in position, and also for providing one face against which the calk may be formed. In order to bend the calk over against the face of the swage block, I have provided a roller movable up and down to engage the horse shoe and force it against the swage block. This roller and its associated parts are all mounted in a guide frame 35, which frame is supported by means of trunnions 36 mounted in the lugs 24, so that the lower end of the frame may swing forwardly and rearwardly relative to the uprights 11, as clearly shown in Fig. 5.

Slidably mounted within the frame 35 is the roller supporting block 37. This block is mounted in grooves formed in the frame 35 so that it is held in line with the frame 35 during its up and down movement.

The calk forming roller is indicated by the numeral 38 and is provided with trunnions 39 mounted in the block 37. This roller is arranged for free rotation and the major portion of it is located in a recess in the roller supporting block 37 as clearly shown in Fig. 5. Its upper rear face, however, is exposed so that when the roller is elevated it will engage the heel portion of a horse shoe and bend it upwardly and against the face of the swage block as hereinafter described. Obviously, if the frame 35 is in a substantially vertical position, the calk formed by the roller will be blunt. If the lower end of the frame 35 is tilted away from the uprights 11, then a calk formed by the roller will be tapered, the degree of inclination of the taper being dependent on the inclination given to the frame 35.

In order that the operator may quickly and easily tilt the frame 35, and support it in any position of its adjustment, I have provided a shaft 40 mounted in the uprights 11 and provided with a lever 41. A crank arm 42 is fixed to the shaft 40 and is pivoted to a link 43, which latter is pivoted to the lower end of the frame 35, hence by a manipulation of the lever 41, the frame 35 may be tilted. I have also provided means for locking the lever in various positions of its adjustment by means of the spring actuated pawl 44 connected with the lever, and designed to co-act with a notched sector 45 mounted on the adjacent upright 11.

Connection between the link 43 and the frame 35 is made adjustable by means of the nuts 46, so that the degree of inclination of the frame 35 may be varied if the pawl and sector do not provide sufficient adjustment for this purpose.

The means for vertically moving the roller block comprises a lever 47 fixed to a shaft 48 mounted in the lower end of the frame 35. Between the sides of the frame 35 is a crank arm 49 on the shaft 48, and pivoted to the crank arm 49 is a link 50 having its upper end pivoted to the roller block. I have provided for limiting the upward movement of the roller block by forming a lug 51 on the frame 35 to be engaged by a lug 52 on the lever 47.

In order that the operator may form calks of uniform length on horse shoes, I have provided an adjustable gage plate 53 mounted on top of the roller block and having its rear face projected down toward the roller. The gage plate is adjustably fixed by means of a set-screw 54 passed through a slot 55 therein. The function of the gage plate is as follows: When a horse shoe is placed on the block 12, it is extended forwardly until it strikes the gage plate. Then it is clamped in position by means of the swage block, and then when the roller is moved upwardly, it is bent toward the swage block. Obviously, by adjusting the gage plate, calks of greater or less length may be made, and all of the calks made on the machine when the plate is in one position of its adjustment, will be of uniform length.

I have also provided simple and easily operated means for cutting off the ends of horse shoe calks as follows: Mounted on the front face of the frame 35 is a stationary cutter blade 56 and mounted on the movable roller block adjacent to the blade 56 is a co-acting blade 57, the said parts being so arranged that when the roller block is at its lower limit of movement, a horse shoe calk may be inserted between the blades from the front of the machine, and then when the roller block is elevated by means of the lever 47, the end of the calk inserted between the blades will be severed. In this connection, I have provided an adjustable gage by which horse shoe calks may be cut off at uniform distances relative to the body of the shoe as follows: Adjustably mounted upon the sides of the frame 35 is a gage frame 58 having a cross piece 59 designed to stand adjacent to the front of the frame 35 near the cutting blades. This gage frame is made adjustable by means of bolts 60 passed through slots 61 in the gage frame, and seated in the sides of the frame 35. In use, the operator places the under sur-

faces of a shoe against the cross piece 59 of the gage frame, and permits the calks of the shoe to project between the cutting blades, and he holds it in this position while the roller block is being elevated. Obviously, all of the calks cut off by the device when the gage frame is in any certain position of its adjustment, will be of uniform length and by adjusting the frame, the length of the calks may be varied.

In some instances calks that are formed by the machine are of different lengths and it is sometimes desirable to cut them off even if they are both of the same length in order to get a smooth and even end. When it is desired to cut them off, the operator grasps the horseshoe in a pair of pincers and holds the horseshoe against the gage with the calk projecting between the cutter blades.

In practical operation, and assuming that it is desired to form horseshoe calks with blunt ends, then the operator adjusts the roller supporting frame in a substantially vertical position, and he also places a face block on the swage block that will have a substantially vertical working face. He then adjusts the gage plate 53 to such position that the calks will be formed of the desired length. He then preferably heats a horseshoe and inserts it from the rear of the machine upon the block 12, until it strikes the gage plate 53. He then lowers the swage block until it firmly engages the horseshoe. He then causes the roller to move upwardly until it strikes the end of the horseshoe, and when the upward movement is continued, the end will be bent up by the roller and pressed between the roller and the swage block to thereby form a calk. If it is desired to vary the angle of the calk on the face thereof that is adjacent to the body of the shoe, the operator either places a face plate 30 of the desired shape on the swage block, or else tilts the brackets 21 and clamps them in position at the desired angle.

If it is desired to vary the angle of the opposite face of the calk, then the operator tilts the roller supporting frame by means of the lever 41. Obviously, by means of the adjustment just described, calks of any desired shape and size may be formed. One of the advantages of having the swage block move both downwardly and forwardly, is that by this arrangement the machine is automatically adjusted for shoes of varying thickness. When a shoe of great thickness is placed on the block 12, the downward movement of the swage block is stopped as soon as it strikes the shoe, and there is just enough space left between the working face of the swage block and the roller to form a calk of the proper thickness, and when a relatively thin shoe is placed upon the block 12, then the swage block moves downwardly and also forwardly so that the space between the working face of the swage block and the roller is much less than in the former case, but is exactly proportioned to the requirements of the shoe, and thus a calk is formed which at its base is of substantially the same thickness as the shoe.

One of the desirable features obtained by having the swage block placed so that it may be tilted at different angles, is as follows: Assuming that the swage block is tilted upwardly at its rear end, then it would engage the shoe a greater distance from the rear end of the shoe than it would if left in the position shown in Fig. 5, hence, a calk may be formed of greater thickness at its base than that of the body of the shoe. Hence, by a proper adjustment of the parts herein described, the machine may be set to form horseshoe calks of any desirable size and shape, and the proportions of the calks may be varied relative to the thickness of the shoe.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is—

1. In a device of the class described, the combination of a stationary horseshoe receiving and supporting block, a swage block having one face substantially parallel with the adjacent face of the horseshoe receiving and supporting block, means for moving the swage block and for securing it in various positions, means for guiding the movement of the swage block so that it will move at an angle of about forty-five degrees relative to the parallel faces of said blocks, and a calk bending device arranged for movement substantially at right-angles to the parallel faces of said blocks.

2. In a device of the class described, the combination of a stationary horseshoe receiving and supporting block, a swage block having one face substantially parallel with the adjacent face of the horseshoe receiving and supporting block, means for moving the swage block and for securing it in various positions, means for guiding the movement of the swage block so that it will move at an angle of about forty-five degrees relative to the parallel faces of said blocks, and a calk bending device arranged for movement substantially at right-angles to the parallel faces of said blocks, and spring actuated means for moving the swage block in a direction away from the horseshoe receiving block.

3. In a device of the class described, the combination of a stationary horseshoe receiving and supporting block, a swage block having one face substantially parallel with the adjacent face of the horseshoe receiving and supporting block, means for moving the swage block and for securing it in various positions, means for guiding the movement

of the swage block so that it will move at an angle of about forty-five degrees relative to the parallel faces of said blocks, and a calk bending device arranged for movement substantially at right-angles to the parallel faces of said blocks, and an adjustable face plate on the swage block to co-act with the calk bending machine.

4. In a device of the class described, the combination of a stationary horseshoe receiving and supporting block, a swage block having one face substantially parallel with the adjacent face of the horseshoe receiving and supporting block, means for moving the swage block and for securing it in various positions, means for guiding the movement of the swage block so that it will move at an angle of about forty-five degrees relative to the parallel faces of said blocks, and a calk bending device arranged for movement substantially at right-angles to the parallel faces of said blocks, and means for tilting the calk bending devices to various angles relative to the horseshoe receiving block.

5. In a device of the class described, the combination of a horseshoe receiving block, brackets supported above it, a swage block slidingly mounted in said brackets, and capable of movement in said brackets at an angle of about forty-five degrees relative to the horseshoe receiving block, means for moving the swage block in said brackets, a frame capable of up and down movement in front of the horseshoe receiving block, a roller in said frame designed to engage the ends of a horseshoe clamped between the swage block and the horseshoe receiving block, and spring actuated means for normally elevating the swage block.

6. In a device of the class described, the combination of a stationary block, brackets supported above it, a slide carrying a roller capable of up and down movement in front of the stationary block, a swage block slidingly mounted in said brackets, means for moving the swage block downwardly and forwardly toward the stationary block, said brackets being pivotally supported adjacent to the stationary block to form an inclined slideway for the swage block, and means for clamping the brackets in different positions of adjustment to vary the angle of the swage block.

7. In a device of the class described, the combination of a stationary frame, a stationary block fixed to said frame, brackets mounted on the stationary frame, a swage block slidingly mounted in said brackets, and arranged for movement downwardly and forwardly toward the stationary block, a roller supporting frame pivotally mounted in said brackets, means for tilting its lower end forwardly and rearwardly relative to the stationary frame, a roller carrying slide supported in said frame, means for adjusting the roller supporting frame relative to the stationary frame, means for raising and lowering the roller slide, said brackets being adjustable relative to the stationary frame, and means for clamping them to the stationary frame to vary the angle of the swage block.

8. In a device of the class described, the combination of a stationary frame, a stationary block at the top of the frame, a swage block arranged for clamping a horseshoe to the stationary frame, a roller supporting frame pivoted at its upper end to the front of the stationary frame adjacent to the swage block, a block slidingly mounted in said roller supporting frame, means for raising and lowering said block, a roller carried by said block and designed to engage the heel portion of a horseshoe clamped between the swage block and the stationary block, and to bend it against the swage block when the roller is raised, a gage plate supported above the roller to engage the heel portion of a horseshoe, and limit its movement over the roller, and means for securing said gage plate to the roller supporting frame at different positions of adjustment.

9. In a device of the class described, the combination of a stationary frame, a stationary block at the top of the frame, a swage block arranged for clamping a horseshoe to the stationary frame, a roller supporting frame pivoted at its upper end to the front of the stationary frame adjacent to the swage block, a block slidingly mounted in said roller supporting frame, means for raising and lowering said block, a roller carried by said block and designed to engage the heel portion of a horseshoe clamped between the swage block and the stationary block, and to bend it against the swage block when the roller is raised, a lever, a crank shaft in the stationary frame and connected with the lever, and link pivoted to the crank and to the lower end of the roller frame for adjusting the roller frame forwardly and rearwardly relative to the stationary frame.

10. In a device of the class described, the combination of a stationary horseshoe receiving member, a swage block arranged for movement toward and from the stationary horseshoe receiving member, said swage block being provided with an adjustable face plate, an adjustable frame adjacent to the stationary member capable of being tilted to various angles, and a slide in said frame designed to be used in bending horseshoe calks held between the swage block and the stationary member, said slide being designed to co-act with the adjustable face plate in determining the angle at which the horseshoe calks will be bent.

11. In a device of the class described, the

combination of a stationary frame, means connected therewith for clamping a horseshoe, a roller block supporting frame connected with the stationary frame and having longitudinal grooves therein, a roller supporting block slidingly mounted in said grooves, a roller mounted in the block and having its upper rear portion exposed adjacent to the horseshoe clamping device for the purposes stated, a shaft mounted in the lower end of the roller block supporting frame, a lever fixed to the shaft, a crank fixed to the shaft and a link pivoted to the crank and to the roller block.

12. In a device of the class described, the combination of a base, two uprights fixed to the base, a stationary block at the top of said uprights, brackets fixed to the top of said uprights above the stationary block, a swage block slidingly mounted in said brackets and arranged for moving downwardly and forwardly toward the stationary block, a shaft extended through the stationary frame and said brackets, a cam shaped arm fixed to said shaft, a lever fulcrumed to the uprights and designed to engage said cam shaped arm, a spring raised foot lever connected with said lever, crank arms on said shaft, links connected with said crank arms and with said swage block, a roller block supporting frame pivoted at its upper ends to said bracket at the front of said stationary blocks, a roller carrying slide therein, and means for raising and lowering the slide.

Des Moines, Iowa, Dec. 19, 1907.

ELMER N. CHILDS.

Witnesses:

EDMUND NICHOLS,

H. P. MARCKEES.