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PATENTED MAR. 8, 1904.

J. J. TYNAN & H. C. MOSTILLER.
PNEUMATIC CALKING TOOL.

NO MODEL.

APPLICATION FILED NOV. 4, 1903.

3 SHEETS—SHEET 1.

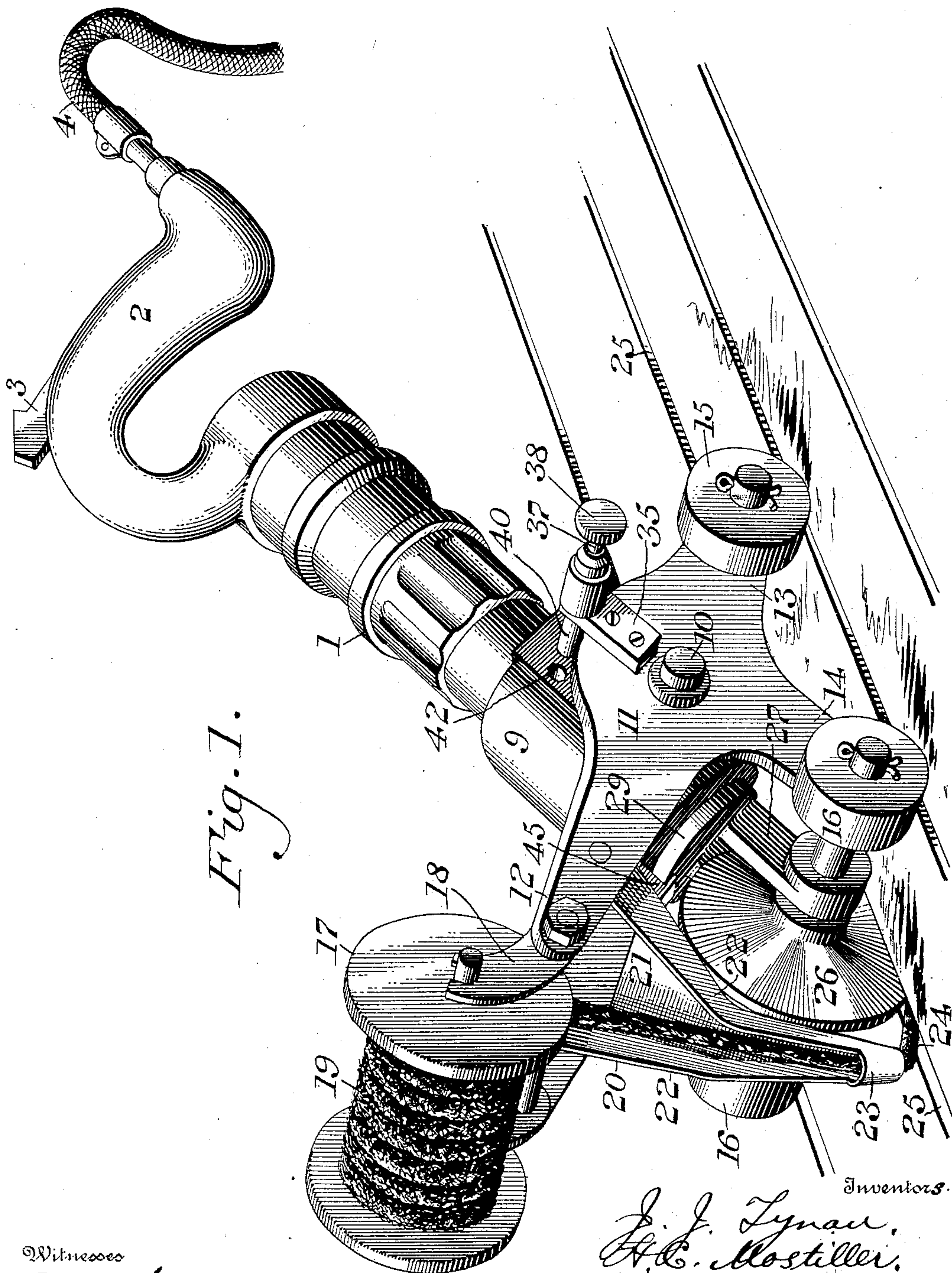


Fig. 1.

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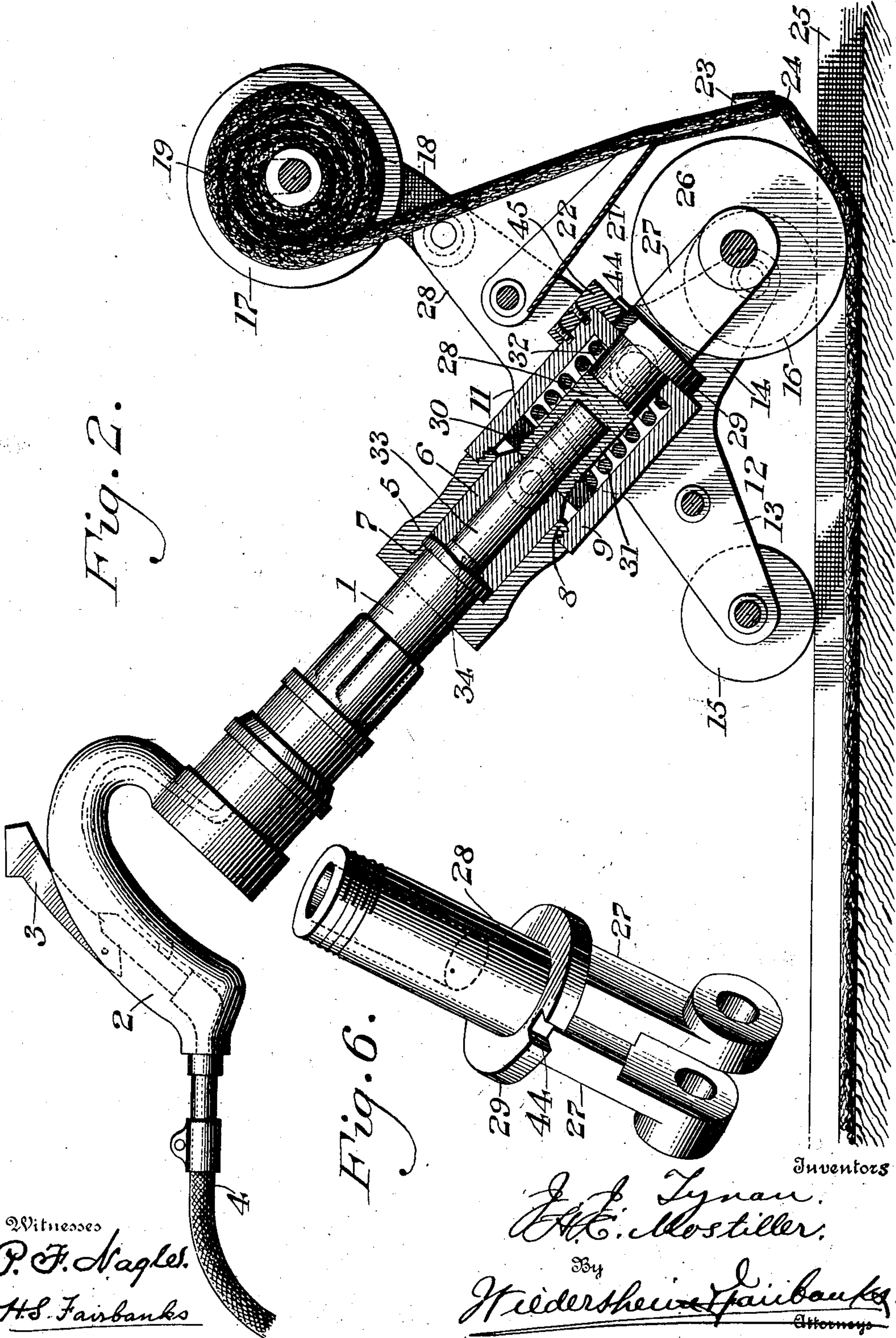
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3 SHEETS—SHEET 2.



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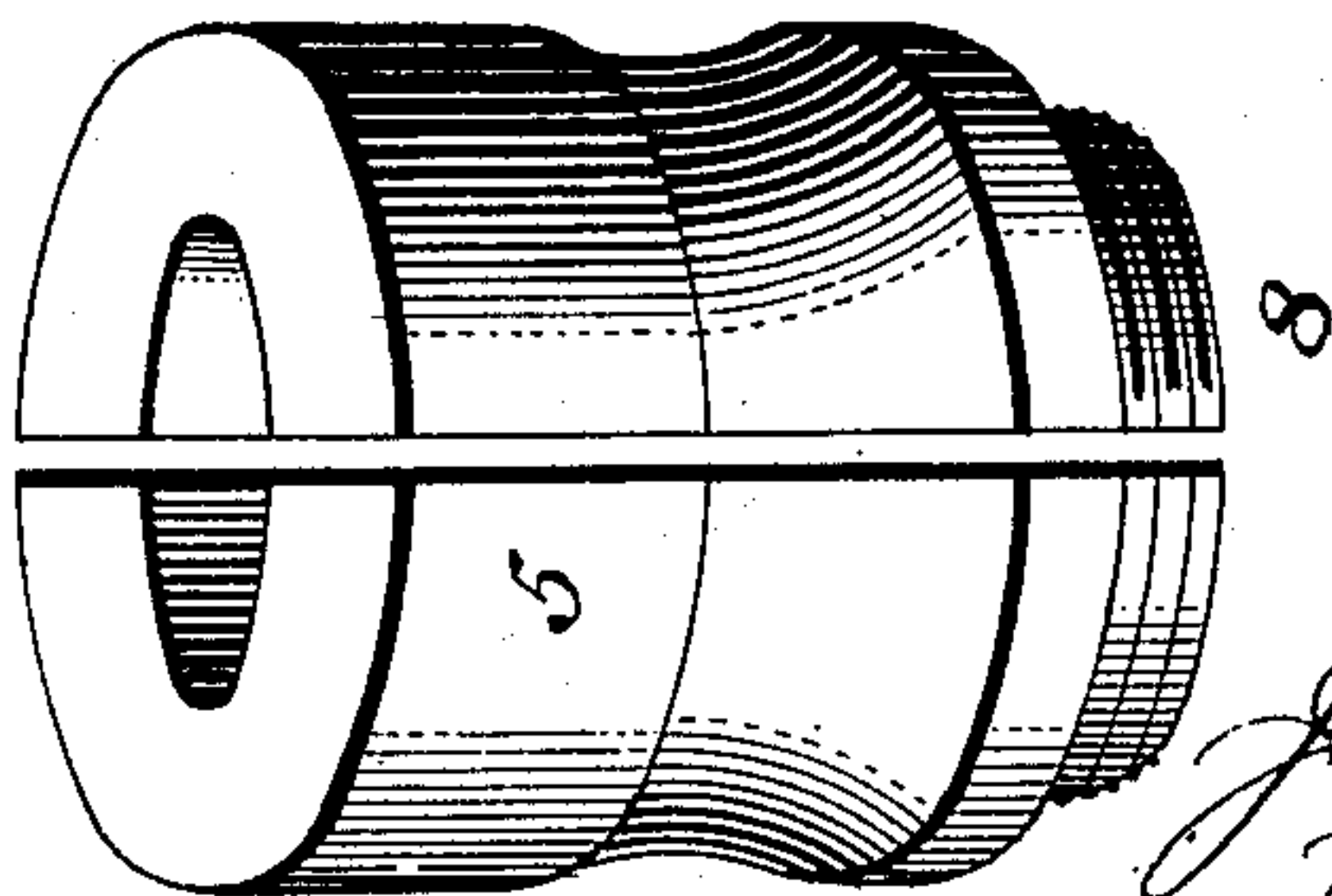
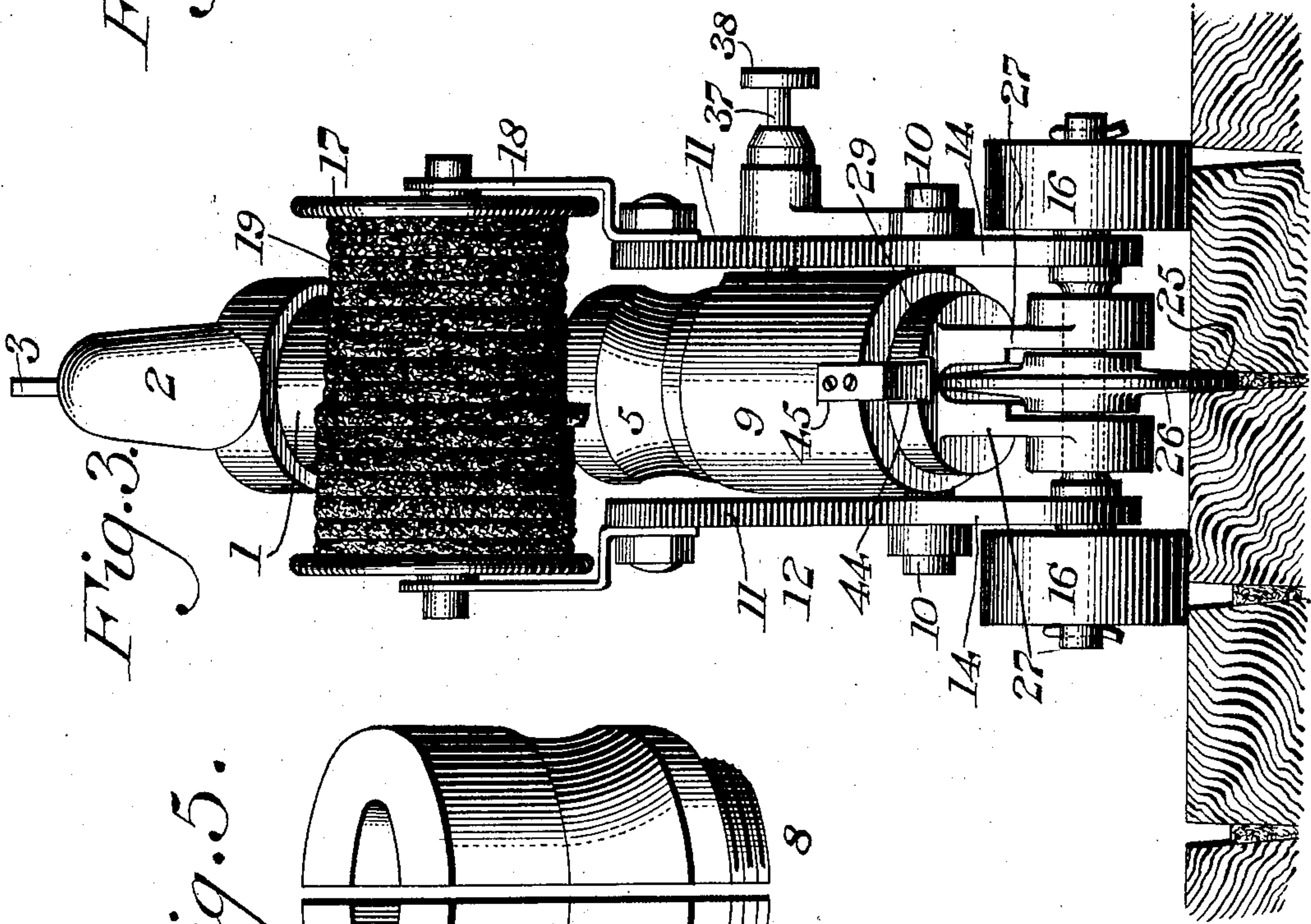
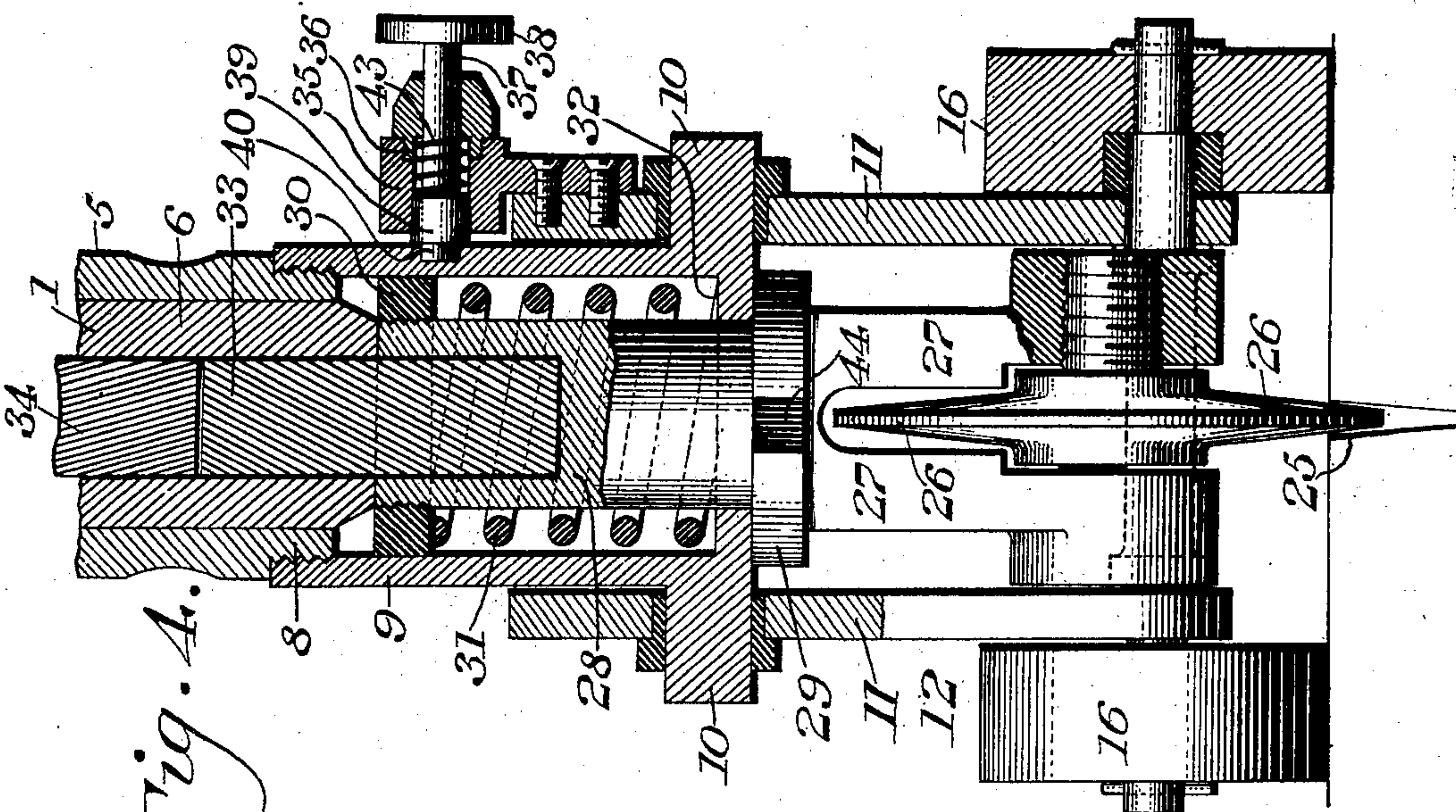
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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PNEUMATIC CALKING-TOOL.

SPECIFICATION forming part of Letters Patent No. 754,175, dated March 8, 1904.

Application filed November 4, 1903. Serial No. 179,793. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH JAMES TYNAN and HARRY CLAY MOSTILLER, citizens of the United States, both residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Pneumatic Calking-Tools, of which the following is a specification.

The uncertainty of the results of hand-calking due to the difficulty of securing skilled labor at the time required and to the personal elements of inattention, variation in the distribution of the tar or pitch filling within the reamed seam, and in strength and direction of blow make it highly desirable to employ a machine for calking purposes. The short time permitted for calking decks, &c., of vessels while they are in port frequently makes this absolutely necessary, if the work is to be done at all. These difficulties require for their correction a calking-machine which is light in weight, rapid and uniform in use, and which is automatic in all of its operations. The device illustrated in the drawings and herein described has been demonstrated to be such a machine, capable in the hands of an unskilled laborer of doing the work of six skilled calkers and with less fatigue to the operator than results from hand-calking.

It is important that the oakum or calking material be uniformly bedded in the base of the out-gage groove-joint, and that consequently the hammer-blows must be uniform, so that the calking will be pressed equally against the symmetric sides, so as to produce an efficient and reliably tight joint, so that an evenly-reamed seam with a correspondingly equable distribution of evenly-pressed calking material being present it follows that the tar or pitch filling must necessarily be equally distributed along the whole line of jointing, whereby the desired results are attained.

For the purpose of overcoming the above objections to hand-calking we have produced the herein-described novel construction of pneumatic calking-tool, which is readily rendered operative by the pressure of a manually-operated trigger of a pneumatic tool or ham-

mer of any standard make, such hammer being easily detachable and capable of being relegated to other duties in a few moments when the calking-tool is not being used.

The invention also consists of novel means for eliminating the jar or shock usually incident to the operation of pneumatic tools, whereby a single operator is enabled by this machine to easily perform the work of from six to eight expert hand-calkers, and yet with this extraordinary increase of output his duties, from the standpoint of fatigue, are fifty per cent. lighter than the work of one hand-calker.

Our invention consists of a novel construction and manner of supporting the taper disk employed, which is adapted to perform its desired function automatically and accurately.

It also consists in the provision of novel devices whereby the blows of the reciprocating hammer or piston of the detachable pneumatic tool are not struck upon the rollers of the frame or carriage which constitutes the calking apparatus; but said blows are received by the disk-bearing alone, thus saving the decks from being pounded or injured.

It also consists in novel means for automatically feeding the oakum or other material from a spool to the under side of the taper disk or calking device, and thus automatically feeding said material into the out-gage-joints.

It also consists in the provision of novel means for enabling the entire apparatus to be automatically propelled, which is accomplished by so inclining the hammer as to allow the resultant energy caused by its vibration to drive the taper disk or calking device along the groove to be calked with a simultaneously equal movement of the carriage or roller-guide.

It further consists of a novel construction of depth-regulator, whereby the detachable pneumatic hammer or other tool may be locked at any desired position, whereby the possible working depth of the calking device may be consequently increased or decreased, according to requirements.

It further consists of other novel features

of construction, all as will be hereinafter fully set forth, and particularly pointed out in the claims.

Figure 1 represents a perspective view of a pneumatic calking-tool embodying our invention. Fig. 2 represents a side elevation of Fig. 1, showing a part of the hammering and cushioning devices in section. Fig. 3 represents a front elevation of Fig. 1, certain parts being removed for clearness of illustration. Fig. 4 represents a sectional view, partly in elevation, showing the hammering and cushioning devices and the means for locking the calking devices at the desired inclination. Fig. 5 represents a perspective view of the coupling employed for detachably securing the pneumatic hammer in position. Fig. 6 represents a perspective view of the fork or anvil which carries the calking device.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates the cylinder or barrel of a pneumatic hammering-tool having a long or short stroke and constructed in accordance with any of the well-known types, said tool having a grasping-handle 2 and a manually-operated throttle-valve trigger 3 therein, which controls the admission of compressed air or other motive fluid from the hose 4 to the cylinder 1.

5 designates a split coupling which surrounds the front end or nose-piece 6 of the cylinder 1, said coupling having an internal shoulder 7, adapted to engage the contiguous portion of the hammer-cylinder 1, while its forward portion 8 is threaded for engagement with the cylinder 9.

10 designates trunnions attached to the cylinder 9, said trunnions having their bearings in the sides 11 of the framework or carriage 12, which has the projecting legs 13 and 14, the rear legs 13 supporting the rollers 15, while the forward legs 14 support the rollers 16.

17 designates a reel which is supported in suitable arms 18, mounted upon the carriage 12, said reel having wound thereon the oakum or other calking material 19, the latter being threaded from the reel through the needle or guide 20, the latter consisting of a trough-shaped member having the base 21 and the sides 22, which terminate at the lower portion in the cylindrical guide 23, through which the oakum passes, as indicated at 24, the oakum being shown in Figs. 1 and 2 as being pressed into the seam 25 by means of the rotary calking device or disk 26. The rotary device or calking-tool comprises in the present instance a disk having its walls converging from the center outwardly and is mounted in the arms 27 of the forked anvil, composed of the body portion 28 and the head or flange 29, said body portion passing through an opening in the lower portion of the cylinder 9 and having the nut 30 screwed thereon, against which abuts one end of the spring 31,

the other end of said spring abutting against the shoulder 32.

33 designates a shank or bolt which is adapted to be loosely inserted in the body portion 28 and which when the parts are assembled projects into the nose-piece 6 of the pneumatic impact-tool, whereby it will be seen that said shank 33 is adapted to be struck by the reciprocating piston 34 of the pneumatic impact-tool, which may be constructed after any usual or approved manner. It will thus be clear from the foregoing that the tension of the spring 31, having its ends abutting against the nut 30 and the shoulder 32, will normally hold the parts in the position seen in Figs. 2 and 4, it being apparent that the impact of the hammering piston 34 upon the shank 33 will be imparted to the anvil, consisting of the arms 27, the flange 29, and the body 28, said spring serving to return the parts to the position seen in said Figs. 2 and 4 after the impact of the blows of the hammering piston 34, so that the operation of the device is cushioned and the vibrations will be reduced to a minimum or entirely obviated and fatigue to the operator will be practically overcome.

It is in practice sometimes necessary to vary the angle of inclination of the pneumatic impact-tool and the calking apparatus from the position seen in Figs. 1, 2, and 4, and to provide for this we have placed upon one of the sides 11 of the supporting-carriage a bracket 35, having a recess 36 therein, in which is contained the stem 37, having the finger-piece 38, said stem having a head 39 and terminating in the end portion 40, the last-mentioned parts constituting a latch-pin which is adapted to enter one of the holes, as 42, in the side of the cylinder 9. The end of the stem 37 is normally held in the desired position by means of the spring 43, so that it will be seen that upon pulling the latch-pin outwardly the inclination of the cylinder 9, and consequently of the calking-tool and its adjuncts, may be varied, according to requirements. In order to prevent improper rotation of the fork in which the calking-tool 26 is carried, we provide a recess 44 in the head 29, into which enters the stop 45, the latter being of angular shape, as will be understood from Fig. 2, and adapted to engage said recess, whereby the rotary calking device and its adjuncts are prevented from turning or being in improper alinement.

The operation is as follows: The parts being assembled in the manner indicated in Figs. 1 and 2 and the oakum 24 having been started in the joint or seam to be calked the rotary calking tool or disk 26 is placed in the position indicated in Figs. 1 and 2. The operator grasps the handle 2 and depresses the manually-operated finger or thumb piece 3, whereupon admission of the motive fluid is permitted and the reciprocations of the piston 34

begin, and the impact thereof being transmitted to the shank 33 will be also transmitted to the forked anvil and the rotary calking device 26, which latter is so correlated to the other parts of the apparatus that it simultaneously performs a dual function, to wit: The oakum is hammered into the seam and simultaneously with this hammering action a rotary motion is imparted to the calking-disk, so that the machine automatically advances without requiring the application of force to any extent to the handle 2 to propel it. When it is desired to change the inclination of the calking apparatus, the same can be readily done by means of the latch-pin or its equivalent, and when it is desired to use the pneumatic impact-tool for other purposes the same can be readily disengaged by unscrewing the coupling 5, as is evident.

Our present invention is distinguished from calking devices wherein the hammering piston reciprocates in a vertical line and wherein the calking device consists of a vertically-moving tool which does not rotate, since in our invention the pneumatic hammer or impact-tool is inclined, and its blows are imparted to the calking device in such a manner that the latter is caused to rotate and by its rotation draws the oakum from its reel to the desired extent and also effects the propulsion of the entire apparatus.

It is possible by the use of our invention to procure an evenly-reamed seam with a correspondingly equable distribution of evenly-pressed calking material, and it consequently follows that the tar or pitch filling must necessarily be equally distributed along the whole line of jointing, thus obviously obtaining a most desirable end in a manner much more rapid, efficient, and expeditious than has been heretofore possible or even hoped for with the present method of hand-calking.

We also desire to lay special emphasis upon the novel manner whereby the hammer is guided and supported in its adjustable position, as well as the novel provision for advantageously transmitting the blow of the reciprocating piston to the desired point without any injury to the decks.

It will be apparent that slight changes may be made by those skilled in the art in the calking-tool and in the manner of constructing the carriage and assembling the various parts which will come within the scope of our invention, and we therefore reserve to ourselves the right to make all such changes as come within the spirit of the same, and we do not, therefore, desire to be restricted in every instance to the exact construction herein shown and described.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a calking apparatus, the combination of a pneumatic impact-tool, a rotary calking

device, a support for said tool and device and means for detachably connecting said impact-tool with said support.

2. In a pneumatic calking-tool, the combination of a rotary calking device, an inclined support for said calking device, a pneumatic impact-tool and means for adjusting the inclination of said support and impact-tool.

3. In a calking device, a carriage, a pneumatic impact-tool detachably connected therewith, a rotary device suitably supported and cushioning devices intermediate said calking device and said impact-tool.

4. The combination of a rotary calking device, a forked anvil supporting the latter in an inclined direction, and a pneumatic impact device for hammering said anvil, whereby said calking device simultaneously rotates and advances the apparatus.

5. In a calking apparatus, a carriage, a cylinder mounted in trunnions therein, means for locking said cylinder at the desired inclination, a pneumatic impact-tool, means for detachably connecting the pneumatic impact-tool to said cylinder, and a rotary calking device mounted on said cylinder.

6. In a calking apparatus, the combination of a rotary calking device, a pneumatic impact-tool and means for causing the blows from said impact-tool to simultaneously reciprocate and rotate said calking device.

7. The combination of a rotary calking device, a carriage, a reel for the calking material, a guide located intermediately of said reel and calking device, and a pneumatic impact-tool detachably supported upon said carriage.

8. In a calking apparatus, a carriage, a cylinder mounted in trunnions thereon, means for locking said cylinder at any desired inclination, a pneumatic impact-tool detachably connected with said cylinder, and a calking device.

9. In a calking apparatus, a pneumatic impact-tool, a carriage on which said tool is detachably supported, a rotary calking device consisting of a tapered disk suitably supported, and means for conveying the blows from the impact-tool to said calking device.

10. In a calking apparatus, the combination of a carriage, a pneumatic impact-tool detachably supported thereon, a rotary calking device and means for causing said calking device to both effect the calking at the desired point and to revolve, so as to effect the progression of the apparatus.

11. In a pneumatic calking apparatus, the combination of a carriage, a rotary calking device, a spool for containing the calking material, a guide for the calking material, a pneumatic impact-tool, and means for detachably securing said impact-tool to said carriage.

12. In a pneumatic calking apparatus, a carriage, rollers for said carriage, whereby the latter is movable upon the material to be calked, a cylinder mounted in suitable trun-

nions so as to be capable of oscillation on said carriage, a pneumatic impact-tool detachably connected to said cylinder, a calking device, and means for imparting the blows from said impact-tool to said calking device.

13. In a pneumatic calking apparatus, a carriage, rollers for said carriage, whereby the latter is movable upon the material to be calked, a cylinder mounted in suitable trunnions, so as to be capable of oscillation on said carriage, a pneumatic impact-tool detachably connected to said cylinder, a calking device and means for imparting the blows from said impact-tool to said calking device, in combination with means for cushioning the return movement of said calking device.

14. In a pneumatic calking apparatus, the combination of a carriage, a cylinder mounted in trunnions therein, means for adjusting the inclination of said cylinder, means for detachably connecting the pneumatic impact-tool to said cylinder, a calking device, a supply for the calking material suitably supported on said carriage, and a guide intermediate said calking device and the supply for said calking material.

15. In a pneumatic calking apparatus, a cylinder mounted in suitable trunnions thereon, a rotary calking device, a fork in which said calking device is supported, a body projecting from said fork into said cylinder, a nut on said body and a spring interposed between said nut and cylinder for automatically resetting said calking device.

16. In a pneumatic calking apparatus, a carriage, a cylinder rotatably mounted therein on suitable trunnions, a fork having a body projecting into said cylinder, a calking device, cushioning devices for said body and means for preventing said calking device and its support from improper rotation with respect to said cylinder.

17. In a pneumatic calking apparatus, a carriage composed of a plurality of sides, rollers upon which said carriage is mounted, a cylinder mounted in trunnions in the sides of said carriage, means for varying the inclination of said cylinder, a pneumatic impact-tool detachably connected to said cylinder, a rotary tapered calking device, a reel for the calking material located above said calking device, and a guide for the calking material located intermediate said calking device and reel.

18. In a pneumatic calking apparatus, a suitable carriage, a cylinder supported therein, a pneumatic impact-tool detachably supported in said cylinder, a grasping-handle for said tool, a manually-operated throttle-valve trigger carried by said handle, a calking device, and means for transmitting the blows from said tool to said calking device.

19. In a pneumatic calking apparatus, a carriage, a cylinder mounted in suitable trunnions thereon, a rotary calking device, a fork in which said calking device is supported, a

body projecting from said fork into said cylinder, a nut on said body, a spring interposed between said nut and cylinder for automatically resetting said calking device.

20. In combination with a cylinder, a carriage in which said cylinder is movably supported, an impact-tool, a coupling device for detachably securing said impact-tool to said cylinder, a rotary calking device, means for supporting said calking device from said cylinder, and a loose shank mounted in the body of the support for said calking device and adapted to be hammered upon by the piston of the impact-tool.

21. The combination of a manually-held pneumatic impact-tool, a calking device, a support intermediate said calking device and pneumatic tool, and means for detachably connecting said pneumatic tool to said support.

22. The combination of a cylinder, a calking device supported thereby, a manually-held pneumatic impact-tool, and a coupling device for securing said impact-tool to said cylinder.

23. In a calking apparatus, a rotary disk-shaped calking-tool, a support therefor, means for imparting a reciprocating movement to said tool and for also imparting a rotary motion to said tool whereby the propulsion of the calking apparatus is effected.

24. In a calking apparatus, a rotary disk-shaped calking-tool, a support therefor, means for imparting a reciprocating movement to said tool and for also imparting a rotary motion to said tool whereby the propulsion of the calking apparatus is effected, in combination with a source of supply for the calking material, the latter being unwound and fed to the desired point by the propulsion of said calking apparatus.

25. A manually-held pneumatic impact-tool, a calking device, a support intermediate said calking device and pneumatic tool, means for detachably connecting said pneumatic tool to said support and a loose bolt interposed between said tool and said calking device.

26. A manually-held pneumatic impact-tool, a calking device, a support intermediate said calking device and pneumatic tool, means for detachably connecting said pneumatic tool to said support and a loose bolt interposed between said tool and said calking device, in combination with a cushioning device, whereby the hammer-blows are prevented from injuring the deck or floor to be calked.

27. In a calking apparatus, a rotary calking-disk, a forked anvil having a flange and a body portion, a cylinder into which said body portion enters, a bolt entering said body portion, means for hammering on said bolt and cushioning devices surrounding said body portion.

28. In a calking apparatus, a rotary calking-disk, a forked anvil having a flange and a body portion, a cylinder into which said body portion enters, a bolt entering said body portion, means for hammering on said bolt and cushioning devices surrounding said body portion.

ioning devices surrounding said body portion, in combination with means for preventing said anvil from improper rotation.

29. In a calking apparatus, a calking-tool,
5 a single mechanism for reciprocating and rotating said tool, and a device for carrying the calking material permitting its free paying out.

30. In a calking apparatus, a calking-tool,
10 single means for hammering on said tool and

causing the rotation thereof to automatically advance the same, a device for carrying the calking material and permitting the latter to freely pay out, and a guide for said calking material.

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