

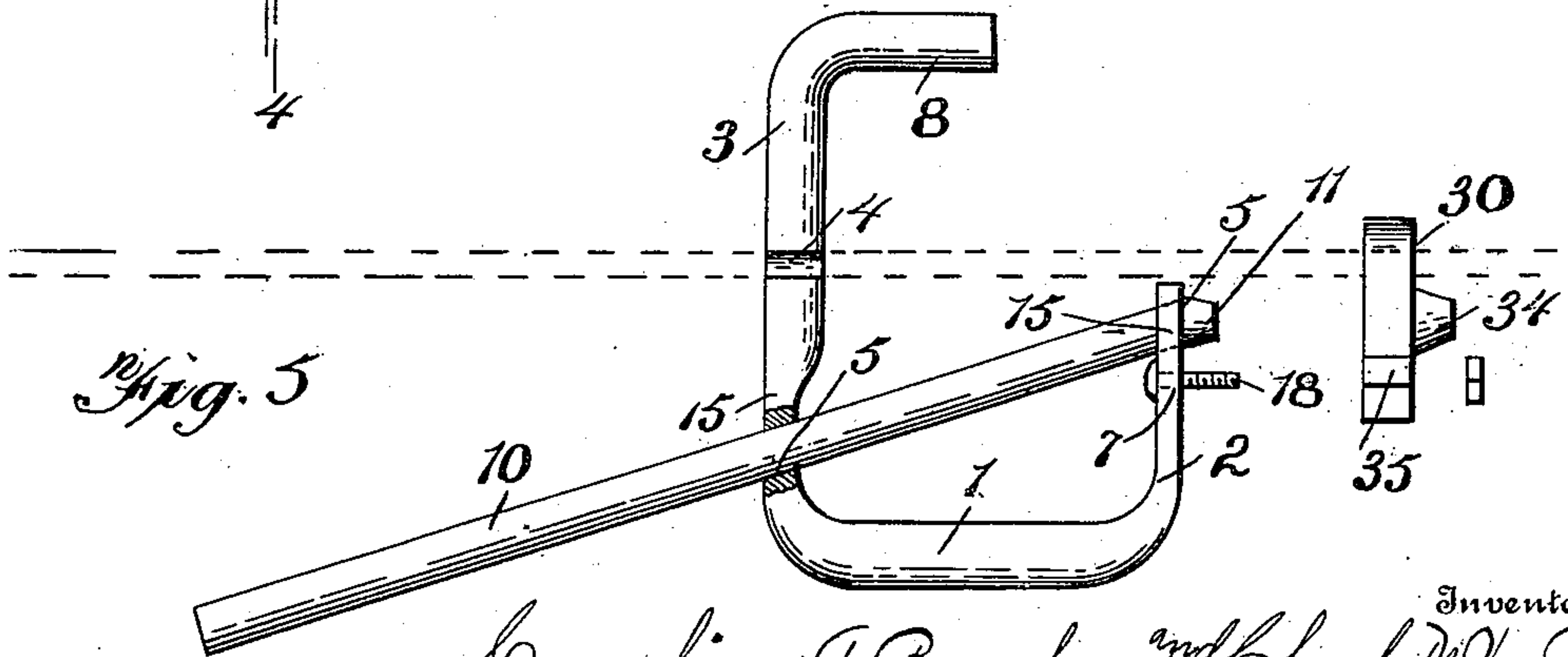
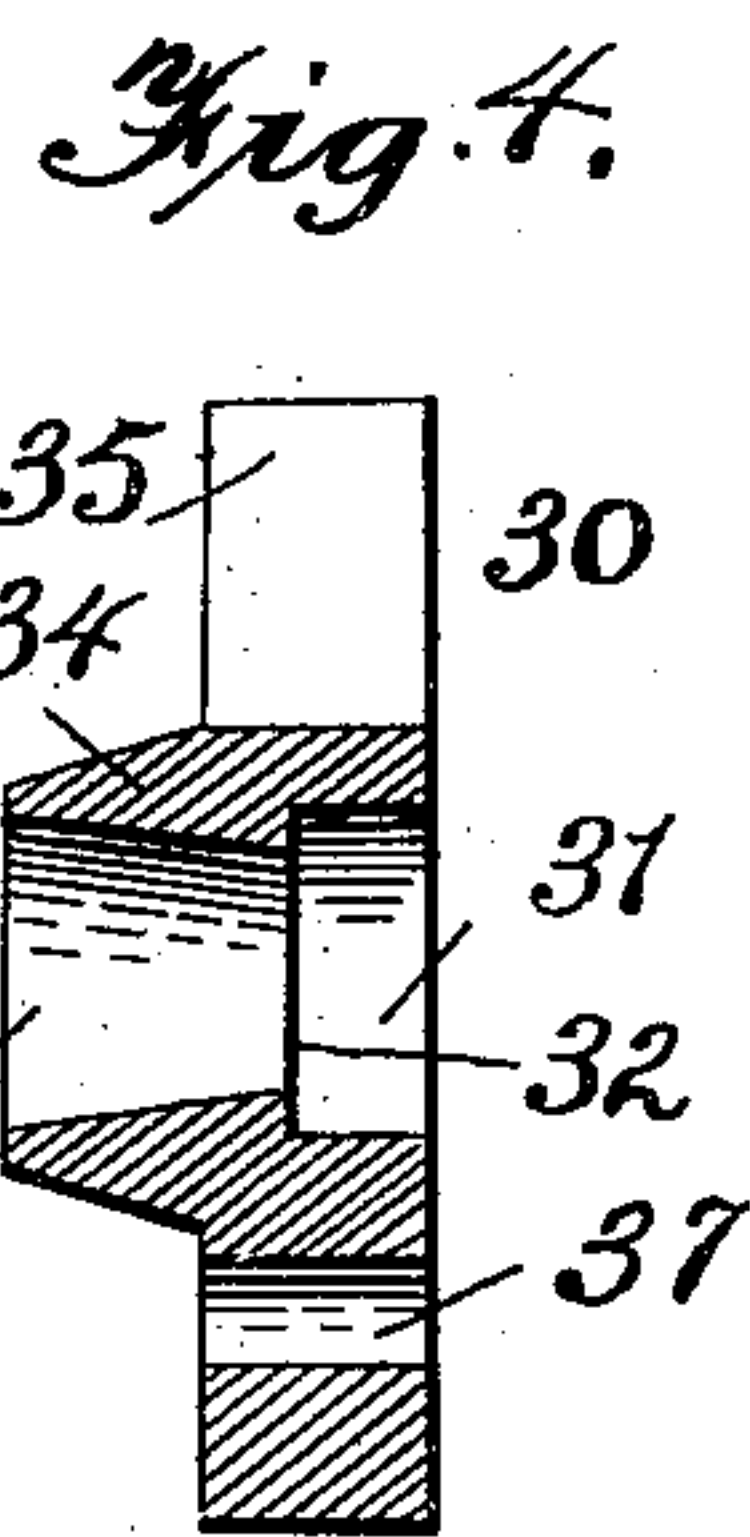
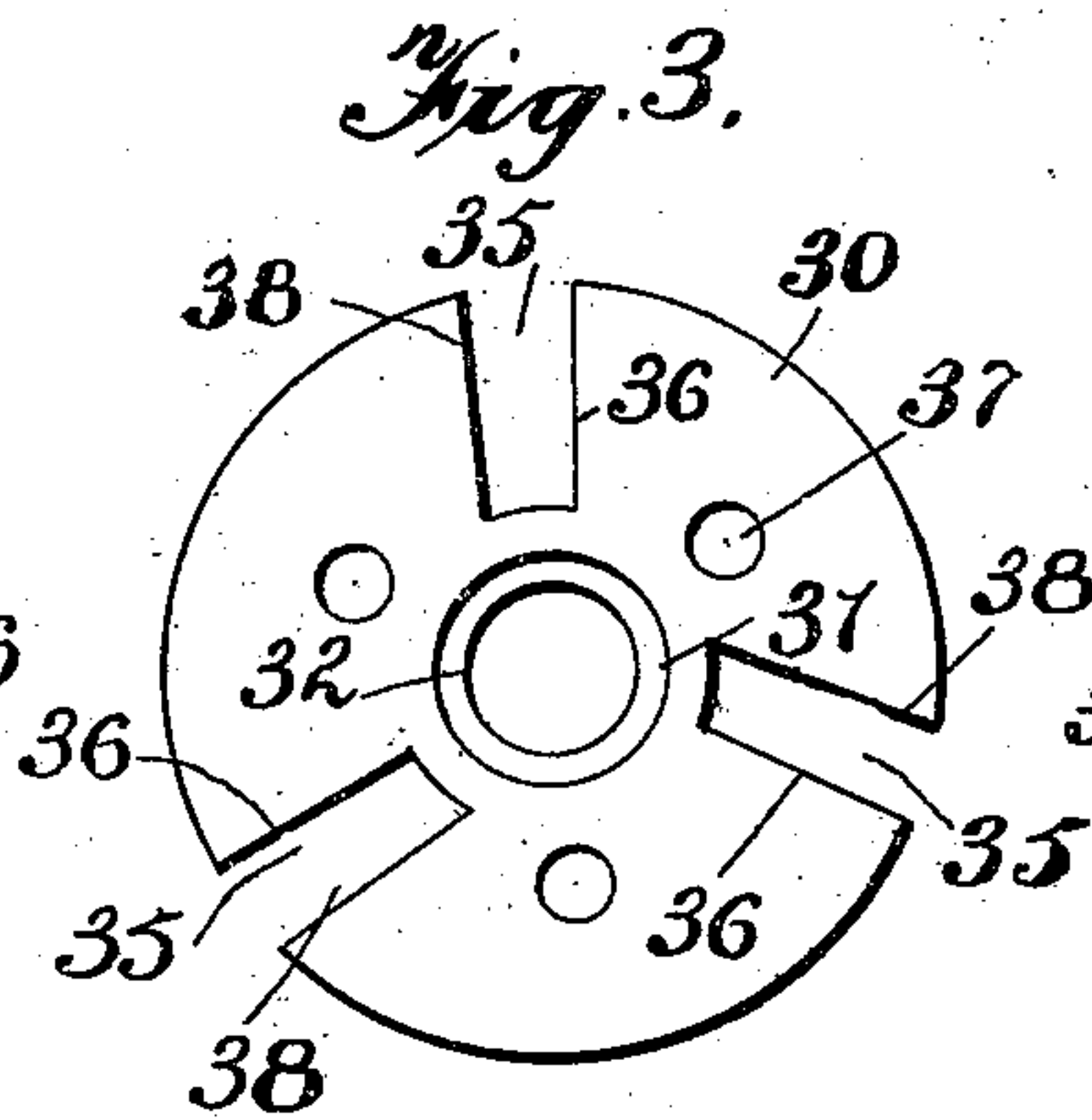
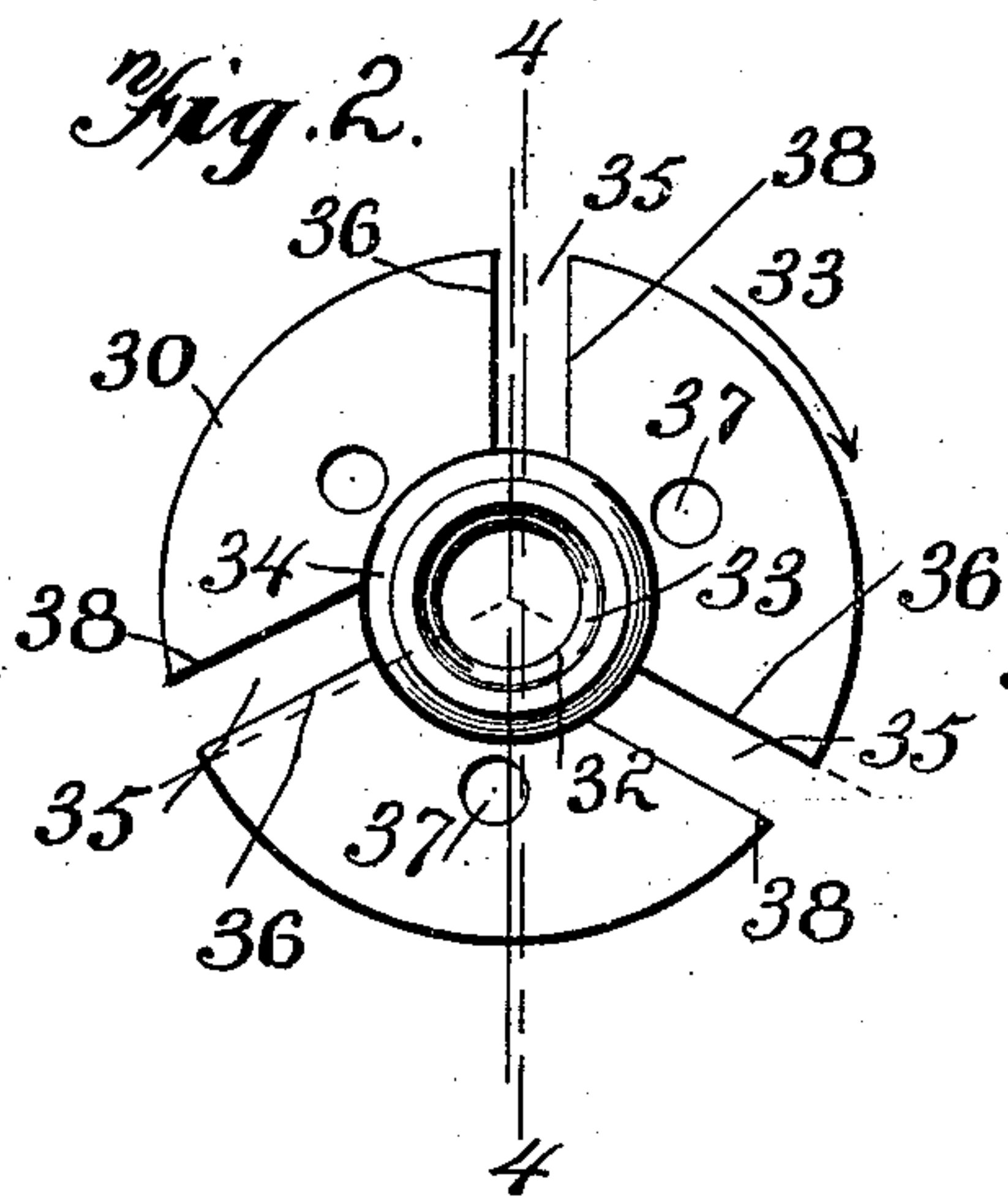
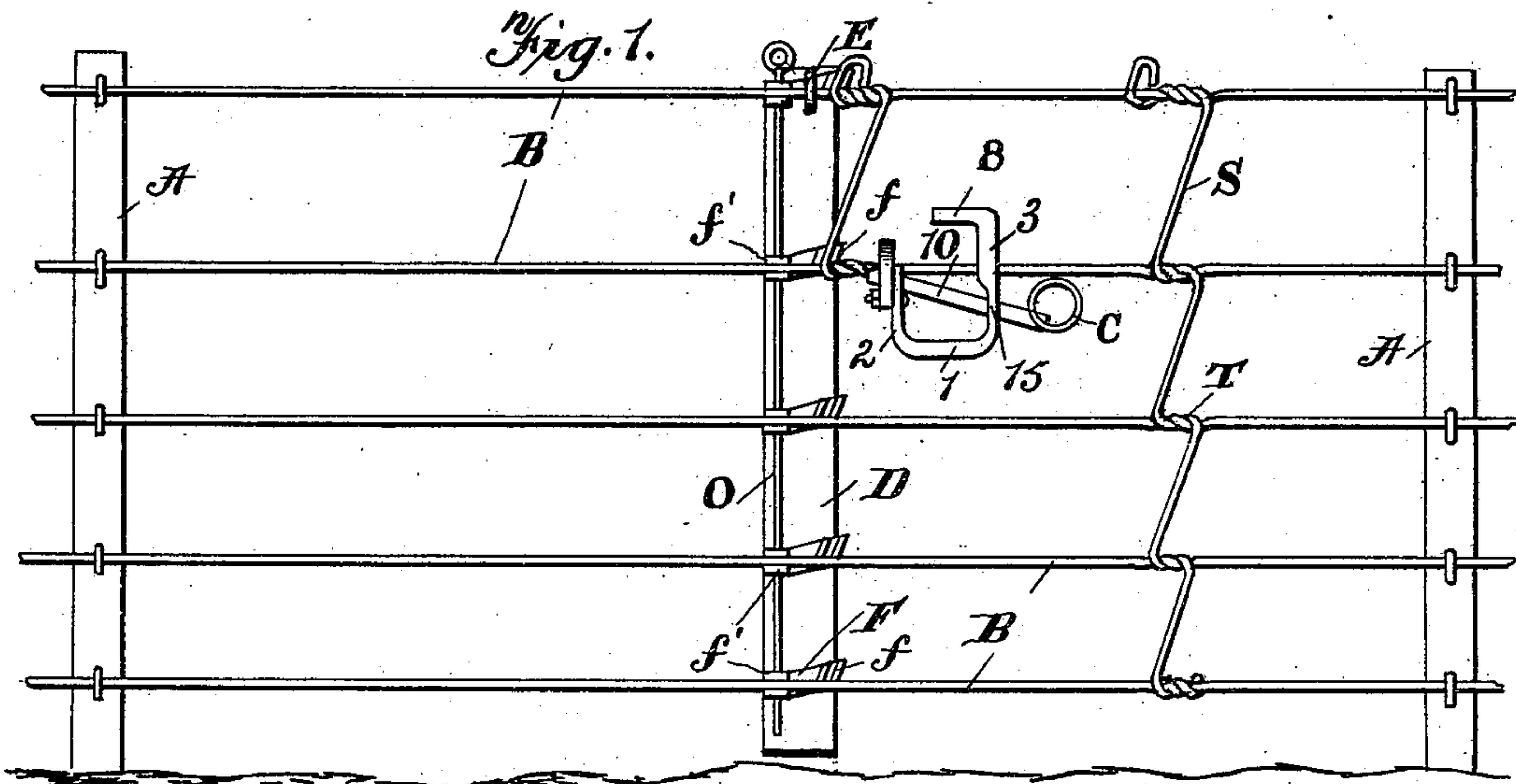
No. 665,729.

Patented Jan. 8, 1901.

C. A. BURNHAM & C. N. VAN RIPER.
WIRE STAY TWISTING DEVICE.

(Application filed Apr. 4, 1900.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

CORNELIUS A. BURNHAM AND CHARLES N. VAN RIPER, OF HOLLY,
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WIRE-STAY-TWISTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 665,729, dated January 8, 1901.

Application filed April 4, 1900. Serial No. 11,459. (No model.)

To all whom it may concern:

Be it known that we, CORNELIUS A. BURNHAM and CHARLES N. VAN RIPER, citizens of the United States, residing at Holly, in the county of Oakland and State of Michigan, have invented certain new and useful Improvements in Fence-Machines; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as

10 will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to wireworking-machines of that class adapted for twisting, and more particularly it is a head for use on a

15 weaving-tool of any construction which will carry it properly, one construction being shown and described herein and another in a companion application filed by us on April 4, 1900, and bearing Serial No. 11,460.

20 One object of our invention is to provide a wireworking device which when securely bolted to any ordinary U-shaped form of handle as may suggest itself to those skilled in the art of wireworking is otherwise complete in

25 itself to the extent that the same may be used for intercabling short strands of plain wire with longer strands of plain wire previously drawn taut and secured at the ends to posts, trees, or other objects.

30 A further object of the invention is to so construct the device that it may be practically secured to any improved form of handle that may suggest itself to others skilled in the art of wireworking, our intention now

35 being to mount the same on the improved form of handle shown in the accompanying drawings.

A further object of the invention is to so construct the device that reactionary friction and wedging of the wires engaged will be ob-

40 viated to the extent that one pound of force applied in operating the device will equal four pounds applied to former constructions adapted to do the same kind of work.

45 A further object of the device is to so construct the device that it will have a triple number of working parts, each working part being adapted to the working of two different sizes of wire and the whole to be adapted to

50 include the working of at least five different sizes of wire.

A further object of the invention is to so construct the device that its interweaving utility will be extended to a threefold degree.

A further object of the invention is to so

55 construct the device that the short strands and the long strands of wire will not be engaged jointly by the same working part, but by different working parts of the device.

To these ends the invention consists more

60 particularly in the head of the weaving-tool constituting a fence-machine either when used alone or in conjunction with any suitable form of support for the horizontal stringer-wires. In the present instance we have shown

65 and described the spacer which was employed in Patent No. 630,653, but this is done only for convenience and we desire not to be limited to the use of that spacer or any other.

Numerals of reference are employed herein

70 to designate the parts now claimed as new and letters of reference for those not so claimed.

In the drawings, Figure 1 is an elevation of a section of fencing, showing the fence-machine applied thereto in the act of twisting

75 the stays. Fig. 2 is a front elevation of the head. Fig. 3 is a rear elevation of the head. Fig. 4 is a section on the line 4 4 of Fig. 2 through the true center of the head. Fig. 5

80 is an enlarged plan view of the weaver viewed from the rear and with its parts disconnected.

Referring to the said drawings, the letters A designate fence-posts connected by stringer-

85 wires B, which are in turn temporarily supported by staples until removed for the machine to pass, when the staples are replaced.

The letter D designates a spacer which is an upright bar, as of wood or the like, and which has a crank E journaled therethrough

90 at a proper point to frictionally engage the upper stringer-wire.

Letters F designate a series of studs attached to the spacer and having at opposite edges of the latter oblique slotted heads *f* and eyes *f'*

95 on their bodies, and through said eyes is adapted to be passed a vertical locking-pin O to stand outside the stringer-wires and hold the same within said eyes. In the use of this spacer the stringer-wires are attached to the

100 posts and supported at proper intervals by the intermediate posts, the wires being drawn

to a proper tension. The spacer is then brought to use, when its eyes f' will stand astride the stringer-wires, the crank E is turned upward so as to bind the uppermost stringer to the stud F, and the pin O is dropped into place at one end of the studs to hold the stringer-wires therein.

The above is descriptive of the spacer used in the patent hereinbefore referred to, but the weaver employed herein is designed as an improvement over that shown in said patent.

Coming now more particularly to the present invention the weaver herein shown has a U-shaped body with a handle 1 and two substantially parallel arms, the forward one 2 being shorter than the rearward one 3 and the latter being preferably provided with a hook 8 at its free end turned inward toward the line of the forward arm projected and serving as an additional handle. The arms are preferably flattened where shown at 15 and are provided through these flattened portions with holes or openings 5, preferably arranged on a line oblique to that of the handle 1. Adjacent the forward opening the front arm 2 is tapped, as at 7, to receive a screw or bolt 18, as described below.

10 is a guide which is a tube of proper diameter to pass through the openings 5, its body being straight and extending some distance beyond the rear arm and its front end 11 being slightly deflected and preferably exteriorly tapered to a small extent. In the back of the rear arm 3 is cut a notch 4, located at a point in a line parallel with the handle 1, and which line if projected would pass a little above the front end 11 of the guide 10, as seen in Fig 5; but as this notch is in the side of the rear arm, while the guide passes through the center of the front arm, it will be clear that these two elements lie in a plane oblique to that through the handle and tube.

All parts are of the desired proportions and materials, though preferably of iron and of about the relative sizes shown in the drawings.

S designates the stay-wire, which is provided initially in a coil C, as shown, and is intended finally to be twisted, as at T, around or with the stringer-wires.

The head shown in Figs. 2, 3, and 4, and which constitutes, perhaps, the most important feature of this invention, consists of a rather thick disk 30, preferably of circular contour, with an opening through its true center, and the rear end of this opening is enlarged, as seen at 31, so as to fit over the front end 11 of the guide when the head is in place. At about midway of the thickness of said disk or perhaps a little forward of its center is a shoulder 32, by which the bore of the opening is reduced to about the interior diameter of the guide 10, and forward of this shoulder the bore flares toward the front, as at 33. This bore is rendered longer than the thickness of the disk by means of a boss 34 formed thereon around the flaring extension 33, and which

boss preferably tapers exteriorly from the front face of the disk to its own front end. Cut in the body 30 are notches 35, (three are shown herein, although there may be more or less,) and the active face 36 of one notch is so arranged as to be radial to the exact center, that of another notch is preferably a trifle in rear of the radial line which is dotted in Fig. 2, and that of the third is preferably a trifle in front of the radial line. The other or inactive face 38 of each notch is forward of the face 36 in the direction of rotation indicated by the arrow, and while the faces might converge slightly toward the center, as shown in Fig. 3, we by preference make them parallel, as shown in Fig. 2. Both faces, and hence the notches, terminate adjacent the largest diameter of the boss. Through the body 30 at proper points between the notches are tapped holes 37 for the passage of the screw or bolt 18, above mentioned. One of the notches may work on wire No. 8 or 9, another on No. 10 or 11, and a third on No. 11 or 12, thus adapting the machine to five different sizes of wire if constructed as shown in the accompanying drawings, although this feature is susceptible of considerable variation and elaboration.

The operation of our device is as follows: The stay-wire is shown in Fig. 1 as provided in a coil which stands before being unwound at the rear end of the guide 10. A section of this coil C is unwound and passed through the guide and out through the bore of the head, the latter having been first secured to the front arm 2 by a screw or bolt 18. If the spacer is used, the extremity of the stay is led upward through the slotted head f of the uppermost stud F and laid across the top stringer. The weaver is then brought into position about as shown in Fig. 1, with the side notch 4 of the rear arm engaging said stringer and the latter passing through the uppermost notch 35 in the head, which now projects above and directly in line with the forward arm 2. The weaving-tool and the uncoiled portion of the stay are then revolved bodily in such direction around this stringer as will force the active face 36 of the notch in use to bear against the stringer, while the boss and the stay revolve around the same and form the twist T. Having made as many revolutions as desired, the notch 4 is disengaged from the stringer-wire and the entire weaver drawn away from the fence, so as to pay out a straight stretch of stay-wire of sufficient length to lead to and through the head f of the next stud F and across the stringer standing between its eyes f' , after which the operation is repeated to form the coil T around this stringer, and so on to the bottom of the fence, by which time the coil C of the stay will be exhausted. In making each stretch of stay it will be obvious that if the weaver is pulled back so far as to uncoil too much of the stay the weaver can be slipped forward to the proper position to take up the excess of

stay and form the twists around the stringers in the manner above set forth.

As a whole the machine herein described differs from that set forth in the companion application in that the latter forms a coil of the stay around a straight stringer, while the present tool forms the stringer and stay into a twist, as indicated in Fig. 1. This results from the fact that the stringer, which lies in the side notch 4 and the uppermost of the notches 35 in the head, does not serve as a fulcrum around which the tool is revolved; but the center of revolution is a point between the stringer and the stay in front of the disk 30, and the fact that the stringer and the guide 10 approach each other accounts for the interior and exterior shape of the boss. Moreover, the guide (and within it the stay) passes through the weaver on a plane intersecting the centers of its arms, while the stringer passes behind the rear arm and over the center of the forward arm, and this arrangement throws the stringer slightly out of the plane of the stay in such direction as to facilitate the twisting of the two in the operation of applying the stringer. As above stated, we desire not to be limited to the use of the spacer herein shown or of any spacer, and it will be clear that this improved head either with the weaver herein or with a tool of other constructions may be used in twisting together two strands of wire which are approximately of the same stiffness.

What we claim as new is—

1. The herein-described weaver for a coiled stay, the same comprising a substantially U-shaped body having its rear and front arms respectively long and short, both flattened at certain points and pierced with openings, and the rear arm having a notch in one side alined with the opening in the front arm and also having an inturned hook at its extremity; combined with a tubular guide for the stay fixedly secured through said openings, the whole for use substantially as above set forth.

2. The herein-described weaver for a coiled stay, the same comprising a substantially U-shaped body whose arms have openings on a line oblique to the length of its handle, and one of which arms has a notch nearly on a line with the opening in the other arm which line is substantially parallel to the length of the handle; combined with a tubular guide for the stay fixedly secured through said openings, the whole for use substantially as above set forth.

3. The herein-described stay-weaver, the same comprising a body having parallel arms and an interposed handle at substantially right angles thereto; combined with a tubular guide for the stay-wire passing through the arms on a line oblique to the handle, and guide-notches for the stringer-wire arranged in a plane oblique to that through the handle and tube, as and for the purpose set forth.

4. The herein-described stay-weaver, the same comprising a body having parallel arms

and an interposed handle at substantially right angles thereto, and a tubular guide passing through the arms on a line oblique to that of the handle but in a plane therewith; combined with a head carried by the front arm and having a notch standing in said plane, and a guide-notch in one side of the rear arm on a line with the head-notch which line is substantially parallel with the length of the handle but in a plane oblique thereto, as and for the purpose above set forth.

5. In a stay-weaver, the combination with the body having a handle and arm, and a tubular guide extending fixedly through said arm; of a notched head having a socket adapted to receive the front end of the guide-tube, and a screw or bolt taking through said head and front arm, as and for the purpose set forth.

6. In a stay-weaver, the combination with the body having a handle and arm, and a tubular guide extending fixedly through said arm on a line oblique to the handle and having its front end deflected; of a notched head having a socket adapted to receive the front end of the guide-tube, and means for detachably securing the head in place to the front face of the arm, as and for the purpose set forth.

7. In a stay-weaver, the combination with the body having a handle and arm, and a tubular guide extending through the arm and having its front end exteriorly tapered; of a notched head detachably secured to said arm and having a central opening enlarged at its rear end so as to fit the front end of said guide, as and for the purpose set forth.

8. In a stay-weaver, the combination with the body comprising a handle and front and rear arms of which the latter has a guide-notch, and a tubular guide extending through said arms; of a disk shaped head having a central bore and a series of substantially radial notches, and means for securing this head to the front arm with its bore alined with the guide-tube and one of the notches alined with that in the rear arm, as and for the purpose set forth.

9. A stay-weaver comprising a body having a tubular guide with a projecting front end; combined with a disk-shaped head having a plurality of substantially radial notches and a central bore enlarged at its rear end to fit the front end of the guide, a boss surrounding the bore on the forward side of the head, the latter being pierced with holes between said notches, and a screw or bolt passing removably through one of said holes and into the body, as and for the purpose set forth.

10. A stay-weaver comprising a body composed of a handle and two arms of which the rearmost has a guide-notch, and a tubular guide with a projecting front end; combined with a head having a plurality of notches and a central bore enlarged at its rear end to fit the front end of the guide, a boss surrounding the bore on the forward side of the head,

the latter being pierced with holes between said notches, and a screw or bolt passing removably through one of said holes into the front arm for holding the notch which is opposite said hole on a line with said guide-notch, as and for the purpose set forth.

11. A head for stay-weavers comprising a disk-shaped body with a truly-central bore, the body having a series of notches extending from its periphery inward and one of them with its active face on a line a little in rear in the direction of rotation of a true radial line; combined with a tubular guide directed toward the rear end of said bore on a line oblique to its axis, and means for connecting the guide removably to the head so as to bring the desired notch of the latter in the plane of the former, as and for the purpose set forth.

12. A head for stay-weavers comprising a disk-shaped body with a truly-central bore and a boss surrounding said bore on the front of the body, the body having a series of notches extending from its periphery inward to the outer side of the boss; combined with a tubular guide directed toward the rear end of said bore, and means for connecting the guide removably to the head so as to bring the desired notch of the latter in the plane of the former, as and for the purpose set forth.

13. A head for stay-weavers comprising a disk-shaped body having a series of notches and a truly-central bore, and a tubular boss fast on the front face of said head and flared interiorly in a direction away from said disk; combined with a tubular guide directed toward the rear end of the bore through the body, and means for connecting the guide removably to the head so as to bring the desired notch of the latter in the plane of the former, as and for the purpose set forth.

14. A head for stay-weavers comprising a disk-shaped body having a series of substantially radial notches and a truly-central bore, and a tubular boss fast on the front face of said head and flared interiorly in a direction away from said disk; combined with a tubular guide directed obliquely toward the rear

end of the bore through the body, and means for connecting the guide removably to the head so as to bring the desired notch of the latter in the plane of the former, as and for the purpose set forth.

15. A head for stay-weavers comprising a disk-shaped body having a series of substantially radial notches and a truly-central bore, and a tubular boss fast on the front face of said head and having its body tapered exteriorly in a direction away from said disk; combined with a tubular guide directed toward the rear end of the bore through the body, and means for connecting the guide removably to the head so as to bring the desired notch of the latter into the plane of the former, substantially as and for the purpose set forth.

16. A head for stay-weavers comprising a disk-shaped body having a series of substantially radial notches and a truly-central bore, and a tubular boss fast on the front face of said head and having its bore flared interiorly and its body tapered exteriorly in a direction away from said disk; combined with a tubular guide directed obliquely toward the rear end of the bore through the body, and means for connecting the guide removably to the head so as to bring the desired notch of the latter into the plane of the former, as and for the purpose set forth.

17. A head for stay-weavers comprising a thick disk-shaped body with a central bore enlarged at its rear side so as to produce an interior annular shoulder, and an integral boss projecting from its front side and having a bore communicating with that in the body; combined with a tubular guide whose end enters the enlarged portion of the bore and rests against said shoulder, and means for connecting the head with the guide, as and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

CORNELIUS A. BURNHAM.
CHARLES N. VAN RIPER.

Witnesses:

CHARLES H. BAIRD,
HARRIETT D. WRIGHT.