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D. D. PASQUALLE

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WIRE TIE CLAMP

Filed March 22, 1926

Fig. 1.

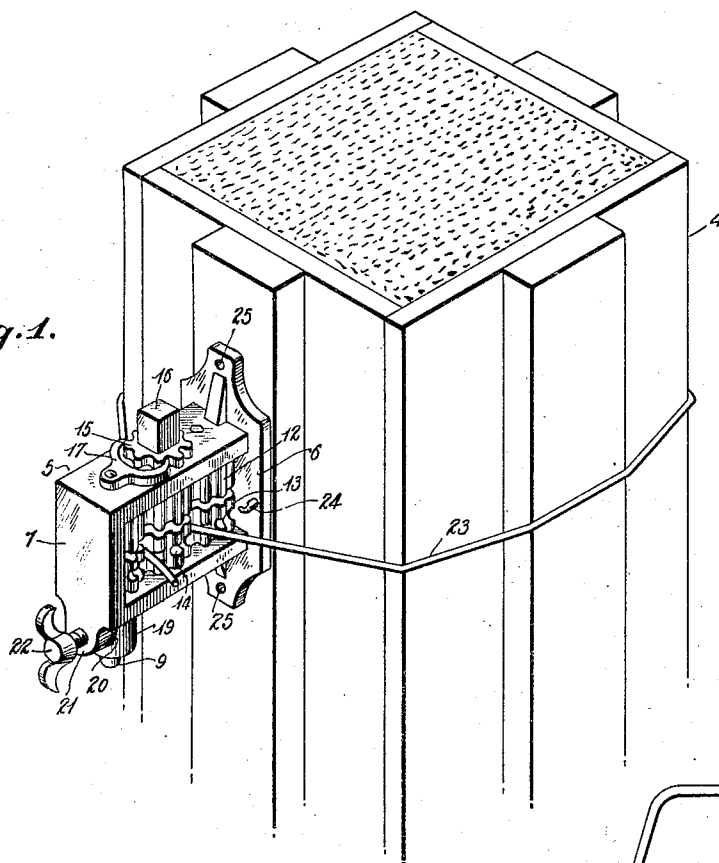


Fig. 2.

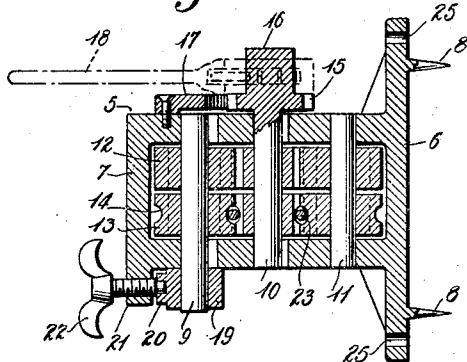
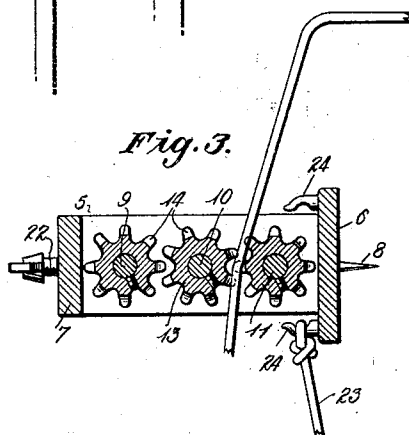


Fig. 3.



Inventor
Dominic D. Pasqualle

By *Bernard F. Garvey*
Attorney

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UNITED STATES PATENT OFFICE.

DOMINIE D. PASQUALLE, OF BENNING, DISTRICT OF COLUMBIA.

WIRE TIE CLAMP.

Application filed March 22, 1926. Serial No. 96,643.

The present invention consists of a wire tie clamp and is especially adapted for use on concrete molds or forms which are customarily used in the building of pillars, walls, columns, etc.

An object of the invention is to provide a clamp for the wire or wires which encircle the mold or form, the construction being such that the wire is first drawn to securely embrace the mold or form and is positively held from slipping, without the necessity of bending the wire or otherwise distorting or mutilating the same.

A further object of the invention is to provide a wire clamp which may be set up and used by a single workman in contradistinction to clamps now used for this purpose in which two or more workmen are usually required for tightening the wire around the mold or form and in securing the wire after it has been so tightened.

Other objects of the invention will be apparent from the following description of the present preferred form of the invention taken in connection with the accompanying drawings wherein:—

Fig. 1 is a perspective view of a wire tie clamp constructed in accordance with the present invention illustrating its application on a concrete form or mold;

Fig. 2 is a vertical sectional view of the clamp per se; and

Fig. 3 is a horizontal sectional view of the clamp per se showing portions of the wire strand engaged therewith.

In the drawings, in order to illustrate the application of this invention, a portion of a concrete form or mold is illustrated as indicated at 4. This form, as is customary, is made of wood and is, of course, adapted for removal after the concrete or like plastic material has hardened.

The clamp constructed in accordance with the present invention consists of a frame, generally designated 5, which embodies a base 6 with an integrally formed arbor 7. The base has studs 8 formed thereon which are adapted for penetration in the mold 4 through the medium of which the frame is secured to the mold. Attention is directed to the fact that the ends of the base which carry the studs 8 extend appreciably beyond the outer faces of the arbor 7 so that these ends may be tapped by a hammer or other instrument in order to embed the studs 8 in the mold with facility.

The arbor 7 has rotatably mounted therein three shafts 9, 10 and 11 each of which carries a pair of toothed wheels 12 and 13. The wheels 12 intermesh and constitute the driver wheels while the wheels 13 also intermesh and are provided with semicircular wire receiving depressions 14, these wheels constituting the wire clamping and feeding elements. One end of the shaft 10 is extended through one side of the arbor 7 and has a ratchet wheel 15 integrally formed thereon and also an enlarged squared terminal 16 which is located beyond the ratchet wheel. A double acting pawl 17 is pivotally mounted on the arbor 7 adjacent the ratchet wheel 15 and is engageable with the latter so as to lock the wheel from movement when desired immaterial of the direction in which the ratchet wheel has been turned. The squared end 16 of the shaft 10 is adapted to receive suitable means for rotating the shaft, such, for instance, as a ratchet wrench 18. This permits the shaft to be rotated in either direction and the handle thereof retracted to a desirable operating position at any time desired.

One end of the shaft 9 is also extended through the arbor 7 on the opposite side to that through which the shaft 12 is extended and is equipped with a collar 19. A portion of the periphery of the collar 19 is extended, as indicated at 20, and shown to advantage in Fig. 2, and is provided with a recess. A lug 21 projects laterally from the arbor 7 and is provided with a screw-threaded opening which aligns with the opening in the enlargement 20. The screw-threaded opening receives a correspondingly threaded set screw 22 the inner end of which latter is reduced and engages the opening in the enlargement 20 of said collar.

Upon reference to Fig. 2 of the drawings it will be noted that the openings which receive the extended portion of the shaft 9 and the lower end of the shaft 10 are elongated so that movement of these two shafts is permitted thereby correspondingly moving the wire clamping wheels 13.

In the preferred form of the invention illustrated to advantage in Fig. 1, the wire strand, designated 23, is encircled about the mold 4 and has the free ends thereof inserted between the wheels 13. One end of the strand is engaged between the inner and intermediate of the wheels 13 and the other

end of the strand engaged between the outer and intermediate of the wheels. The set screw 22 is then fed inwardly so as to snugly engage the wheels 13, thereby compressing the ends of the wire strand 23. After this has been done the shaft 10 is rotated through the instrumentality of the bench 18 so as to draw the wire taut. It is apparent that when the wire has been tensioned to the desired degree the shaft 10 is locked from movement by the pawl 17.

In Fig. 3 a slightly modified form of invention is illustrated wherein anchoring hooks 24 are mounted upon the base 6. When this form of invention is used one end of the wire strand is secured to one of the hooks 24 while the opposite end is trained between two of the wheels 13. The wheels 13 are then urged together and rotated as is the case when the preferred form of the invention is employed. It is desirable to use two hooks 24, one on each side of the base, so that the wire strand may be engaged on either side to suit the convenience of the user.

In addition to using the studs 8 it is also desirable to provide nail receiving openings 25 in the base 6 so that a further means of securing the base may be employed if desired, especially where the stress on the clamp will be great. Moreover, if perchance either of the studs 8 should be broken or otherwise rendered unsuitable for use, the nails will hold the clamp from displacement.

It is apparent that this clamp may be used by a single workman since it is first set up in position on the mold after which the wire is engaged around the mold and then fed through the clamp in the manner above described. Moreover, the wire can be reused since it is not mutilated nor distorted in any way by this operation. Furthermore, different sizes of wire may be used in view of the adjustability of the wire clamping wheels. Various changes may be made in the device within the scope of the claims hereto appended.

What is claimed is:—

1. A wire tie clamp including an integral base and frame, three intermeshing clamping and feeding elements rotatably mounted in said frame, a loop element engaged with said clamping and feeding elements whereby rotation of the latter will enlarge or reduce the loop, certain of said clamping and feeding elements being adjustable relative to the other clamping and feeding element, means for effecting such adjustment, and means for rotating the said clamping and feeding elements.

2. A wire tie clamp including an integral base and frame, three intermeshing gears rotatably mounted in said frame and having means on their peripheries to grip a wire

passed between them, a wire loop engaged with said gears whereby rotation of the latter will enlarge or reduce the loop, certain of said gears being adjustable relatively to the other gear for moving all the gears into and out of gripping engagement with the wire of the loop, means for effecting such adjustment of the said gears, and means for rotating the gears.

3. A wire tie clamp including an integral base and arbor, three parallel shafts rotatably mounted in the arbor, two of said shafts being adjustable relative to the third for increasing or diminishing the spacing therebetween, a wire clamping and feeding element carried by each shaft, said elements being constructed on their peripheries to grip a wire passed between them and being adapted upon adjustment of the shafts to be moved into or out of gripping engagement with the wire, means for adjusting the said adjustable shafts, and driving means connecting the said shafts for simultaneous rotation.

4. A wire tie clamp comprising a pair of intermeshing gears adapted to grip a wire between their peripheries, shafts supporting the said gears, one of said shafts being adjustable bodily with respect to the other shaft for moving the said gears into and out of wire-gripping position, means for bodily moving the said adjustable shaft, and means for rotating the said gears to feed the wire therebetween.

5. A wire clamp comprising parallel intermeshing and relatively adjustable sets of driving and wire-gripping gears, means for adjusting one set of driving and wire-gripping gears relative to the corresponding gears of the other set for moving the wire-gripping gears of the respective sets into and out of wire-gripping position, said wire-gripping gears being constructed on their peripheries to grip a wire between them, and means for rotating the said sets of gears.

6. A tie wire clamp including an integral base and arbor, said arbor having a pair of oppositely disposed elongated openings and a pair of oppositely disposed circular openings, a non-adjustable shaft journaled in said circular openings, an adjustable shaft journaled in said elongated openings for adjustment in the directions of the non-adjustable shaft, wire-gripping elements fixed on the said shafts to rotate concurrently therewith, a driving connection between the shafts, a collar fixed on one end of the adjustable shaft, and an adjusting screw threadedly engaged with said arbor and connected to the said collar for effecting adjustment of the said adjustable shaft.

DOMINIE ^{his} D. PASQUALLE.
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