

June 15, 1948.

E. H. KUNKLE ET AL

2,443,564

MACHINE FOR TWISTING WIRE FOR USE IN BRICK CUTTING

Filed Nov. 15, 1946

2 Sheets-Sheet 1

**FIG 1**

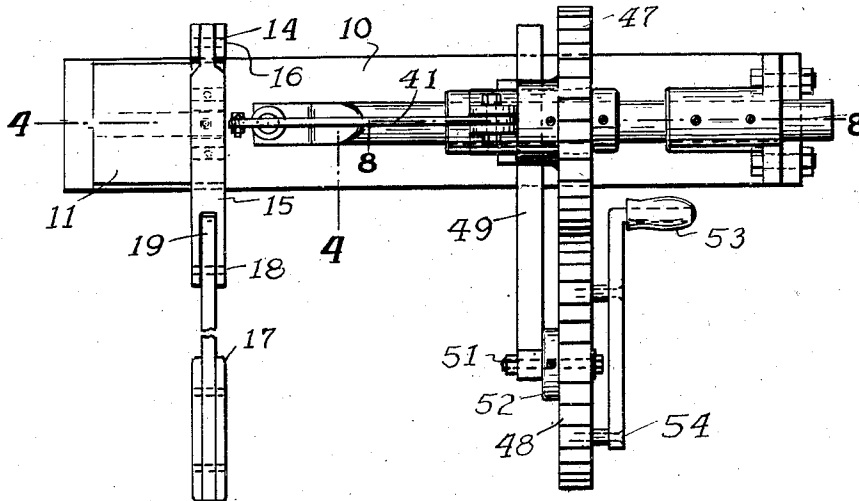


**FIG 2**

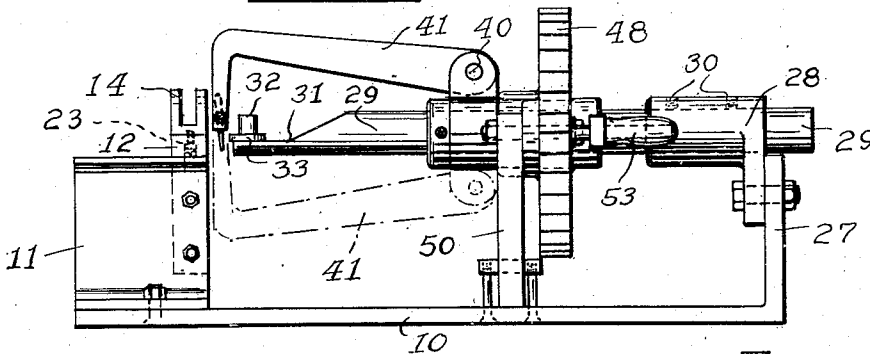
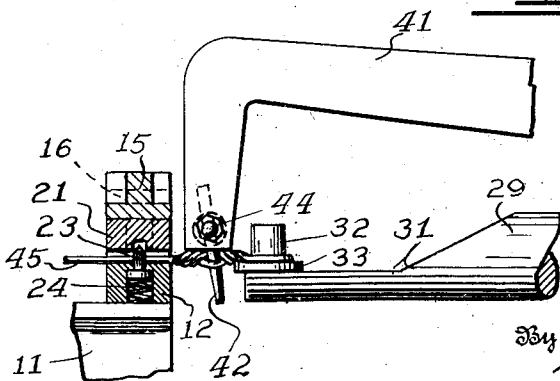
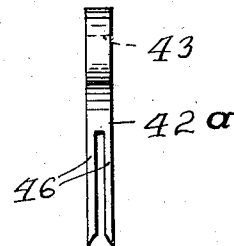


**FIG 4**

**FIG 7**



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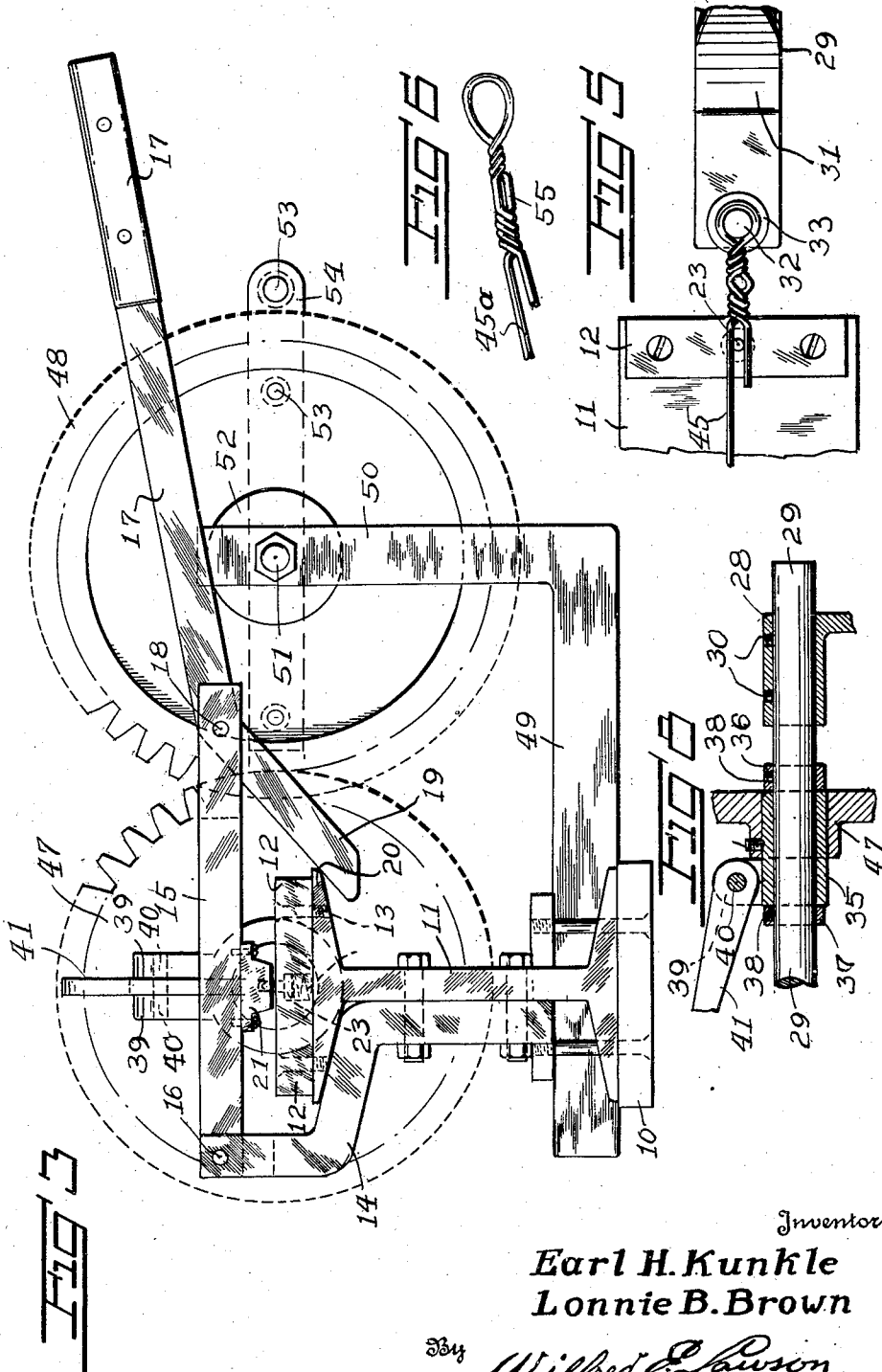
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MACHINE FOR TWISTING WIRE FOR USE IN BRICK CUTTING

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## UNITED STATES PATENT OFFICE

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MACHINE FOR TWISTING WIRE FOR USE IN  
BRICK CUTTINGEarl H. Kunkle and Lonnie B. Brown,  
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Application November 15, 1946, Serial No. 709,960

9 Claims. (Cl. 140-149)

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Our invention relates to a simple, hand operated machine for twisting short wire lengths in general and more particularly to making such wire lengths intended for use for cutting bricks in brick making plants.

Such a wire length has a large loop at each end, and next thereto a tight twist followed by a small eye or straight portion and followed by a loose twist and then the rest of the wire straight and single.

Any length of wire can be formed and twisted by this machine by allowing  $5\frac{1}{2}$  inches to take care of the twist and loop at each end, so that, if the finished or over all length is to be 16 inches, the wire from which it is to be made should be  $21\frac{1}{2}$  inches or 16 plus  $5\frac{1}{2}$ .

Objects and advantages of this machine will be found in the subjoined description with the aid of the attached drawing, wherein one embodiment of the invention is illustrated.

Figure 1 is a top plan view of the machine;

Figure 2 is a front elevation of Figure 1;

Figure 3 is a left hand end view of Figure 2;

Figure 4 is a fractional section taken along line 4-4 of Figure 1;

Figure 5 is a top plan view of Figure 4 with the twisting arm removed and one type of loop at the end of the wire;

Figure 6 is a top plan view of another type of loop;

Figure 7 is a side view of a split or "slip over" needle; and

Figure 8 is an axial section, a vertical plane along line 8-8 of Figure 1.

In the drawings, where like numerals denote the same details in the different views, numeral 10 represents a rectangular base or stand for the portable machine at one end of which a supporting bracket 11 is secured for a lower wire clamping jaw 12, held down as by screws 13. The bracket, as here shown, consists of a short piece of angle iron to the outer side of which is bolted an upwardly directed arm 14 for the clamping lever 15 pivoted thereon by a pin 16. To the end of said clamping lever 15 the clamping handle 17 is hinged as at 18 and said handle has a forward extension or nose 19 adapted, during operation, to contact with the underside of the edge at 20 of the bracket 11.

On the underside of the clamping lever 15 is bolted the upper jaw 21, which, as well as the lower jaw 12, is suitably case hardened. The underside of the upper jaw 21 provided with a small recess 22 which is adapted to receive the point of the tapered drop-pin 23, which is urged

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upwardly by a coil spring 24 housed in the recess 25 of the bottom jaw 12 which is in alignment with recess 22 in the upper jaw.

At the farther end of the base 10, is shown, integral therewith, an upstanding wall 27 on which is bolted a cylindrical bearing member 28, for carrying slidably therein, a shaft 29 of about  $1\frac{3}{8}$  inch diameter and secured in adjusted axial position by a pair of set screws 30. This adjustment is provided for obtaining different lengths of the twisted portion of the wire.

The other end of this shaft 29 is tapered down on one side as at 31 near the fixed jaw 12, to form a seat for the loop forming stud 32, threaded therein and provided with a loose-fitting collar 33 to facilitate detachment from the formed loop on the wire. During operation this shaft 29 and stud 32 remain stationary after having been adjusted and clamped.

Around the shaft 29 is provided a sleeve 35 running loose thereon between two collars 36, 37 secured to the shaft by set screws 38. This sleeve has a pair of radially directed bearing lugs 39 carrying a hinge pin 40 upon which a wire twisting arm 41 is mounted to rock. This arm 41 has attached thereto by a bolt 44 at its free end, a wire holding needle 42 or 42a, see Figures 4 and 7, with an eye 43 engaged by said bolt 44 for angular adjustment in the plane of the twisting arm 41.

There are two types of needles shown in Figures 4 and 7 respectively.

One straight needle 42 with an eye 43 adapted to be inserted with its point between two parallel wires 45 which are to be twisted. The eye 43 engaged by bolt 44 is secured on the end of the twisting arm 41 as in Figure 4, wherein it is shown that the point of the needle can be placed slightly out of the perpendicular. The reason for this is, that the twisting arm 41, when lifted for disengagement of the wire 45 follows a curved path, and for this reason the needle point is set pointing to the rear. In Figure 7 is illustrated a modified needle 42a similarly secured by the bolt 44 engaging in its eye 43 as before, but instead of being pointed this needle is bifurcated or provided with two parallel prongs 46 which are slipped over the two wires 45, instead of engaging between them to hold them firmly during operation.

Upon revoluble sleeve 35, on the stationary shaft 29, is carried a gear wheel 47, which is pinned fast behind the lugs 39, and in front of the fixed collar 36. It will thus be seen that when the gear wheel 47 is turned the sleeve 35 with the

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twisting arm 41, together with needle 42, will rotate around the axis of the stationary shaft 29. In mesh with the gear wheel 47 is a driving gear wheel 48 which is rotatably supported upon a standard 50 forming a part of a laterally extending bracket 49 secured in any suitable manner on the base 10, as seen in Figures 1, 2 and 3. The upper end of the standard 50 has a bearing pin 51 upon which the hub 52 of the gear wheel 48 is mounted to rotate. A crank handle 53 is provided for turning the gear wheel 48 which is secured on one side thereof by studs 54. In the drawings the gear wheels 47 and 48 are shown as toothed wheels, but it is evident that they could be connected in other manners such as by a cross V-belt.

In the operation of the machine, the wire 45 is first placed across the jaw or anvil 12 on one side of the pin 23, with a portion of the wire extending a substantial distance beyond the jaw and on one side of the stud 32. This extended portion is then bent back around the stud 32 and the end is brought back across the jaw upon the other side of the pin 23. The long and short portions of the wire are then held together with the fingers of the operator while the lever 15, which had previously been swung over to the left to remove the upper jaw 21 from over the lower jaw 12, is swung back and down to put the upper jaw on the wire portions. The nose of the handle is then engaged under the flange 20 and pressure applied to the handle 17 to force the jaws 12 and 21 together so as to firmly grip the two wire portions located between the jaws and separated by the pin 23.

The needle arm, which at the start of the operation had been swung upwardly and to the right to rest against the gear 47, is then swung back and down to the position in which it is shown in Figures 2 and 4 and the needle 42 is passed between the two portions of the wire, between the drop pin 23 and the stud 32. While the looped portion of the wire is thus engaged around the stud 32 and the two portions lying on opposite sides of the drop pin 23 are gripped between the jaws, rotation is then imparted to the gear 47 which will result in turning the arm 41 around the shaft 29. Accordingly it will be readily seen that the two portions of the wire between the stud 32 and the pin 23 will be twisted together in the manner shown in Figures 4 and 5. After the desired number of twists the pin can be removed by giving a slight reverse rotation to the gear 47 and then swinging the arm upwardly and over to the right to its former or starting position. By then lifting the loose fitting collar 33 the loop or eye of the twisted wire will be slipped off of the stud 32. There is thus obtained a double twisted non-slipping wire.

The formation of the type of a loop of wire as indicated in Figure 6, where the intermediate portion 55 remains straight, instead of having a small opening as in Figure 5, this is accomplished by the use of a needle 42a of the character shown in Figure 7, which is bifurcated and holds the straight wire portion 55.

It is to be understood that the invention as herein disclosed may be varied from the details described and shown without departure from the spirit of the subjoined claims.

We claim:

1. A wire twisting machine, comprising a base member, a non-revolvable, means supporting said shaft on said base member, spaced elements for holding a piece of wire doubled to form two portions, one of said elements being carried upon an

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end of the shaft, and means for engaging said wire portions between said holding elements and for twisting said wire portions together while said holding elements remain stationary.

2. A wire twisting machine as described in claim 1, wherein said twisting means consists of an arm, a needle on said arm for engaging said wire portions, and means for revolving said arm with the needle around the axis of said shaft.

3. A wire twisting machine as described in claim 1, wherein said twisting means consists of an arm, a needle on said arm for engaging said wire portions, means for revolving said arm with the needle around the axis of said shaft, and a sleeve on said shaft provided with a pivot bearing for supporting said arm to permit oscillation thereof in the plane of the axis of said shaft.

4. A wire twisting machine as described in claim 1, wherein said twisting means consists of an arm, a needle on said arm for engaging said wire portions, means for revolving said arm with the needle around the axis of said shaft, a sleeve on said shaft provided with a pivot bearing for supporting said arm to permit oscillation of the arm in the plane of the axis of said shaft, and means for revolving said sleeve and arm around the axis of the shaft, while said needle engages the wire portions between the holding elements.

5. A wire twisting machine as described in claim 1, wherein said twisting means consists of an arm, a needle on said arm for engaging said wire portions, means for revolving said arm with the needle around the axis of said shaft, a sleeve on said shaft provided with a pivot bearing for supporting said arm to permit oscillation of the arm in the plane of the axis of said shaft, the axis of said shaft, and said needle being pointed for entrance between said portion of the doubled wire.

6. A wire twisting machine as described in claim 1, wherein said twisting means consists of an arm, a needle on said arm for engaging said wire portions, means for revolving said arm with the needle around the axis of said shaft, a sleeve on said shaft provided with a pivot bearing for supporting said arm to permit oscillation of the arm in the plane of the axis of said shaft, and said needle being bifurcated for straddling the two portions of the doubled wire.

7. A wire twisting machine as described in claim 1, wherein said holding elements comprise a stud on the said end of said shaft around which stud the wire is looped, and clamping jaws for gripping the two portions of the doubled wire.

8. A wire twisting machine as described in claim 1, wherein said holding elements comprise a stud on the said end of said shaft around which stud the wire is looped and a pair of clamping jaws for gripping the two portions of the doubled wire, said twisting means consisting of an arm, a needle on said arm for engaging said wire portions, a sleeve on said shaft provided with a pivot bearing for supporting said arm for oscillation in the plane of the axis of said shaft, and means for revolving said sleeve and arm around the axis of the shaft whereby said needle engaging wire portions between the holding elements is revolved around said axis to twist the wire portions together, said needle being pointed for entering between the portions of the doubled wire.

9. A wire twisting machine as described in claim 1, wherein said holding elements comprise

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a stud on the said end of said shaft around which stud the wire is looped and a pair of clamping jaws for gripping the portions of the wire, one of said jaw members being a stationary lower jaw, a pin in said lower jaw, the other jaw member having a recess to receive said pin, a pivoted clamping lever, one of said jaw members being secured to said clamping lever, whereby pressure applied on the clamping lever will press said jaws together to hold the wire portions between them.

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