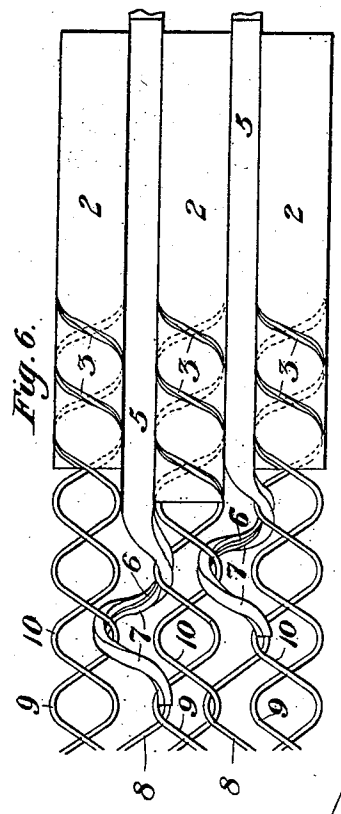
No. 711,810. Patented Oct. 21, 1902.

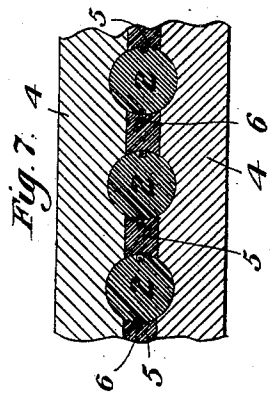
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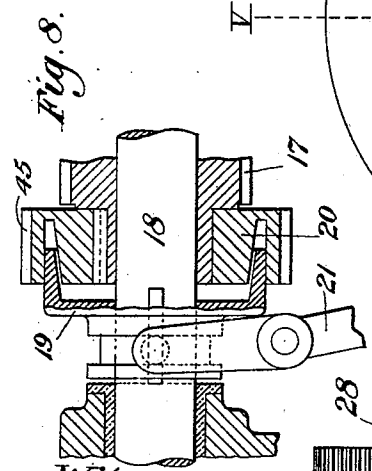
WIRE WEAVING MACHINE.

(Application filed Jan. 18, 1902.)

(No Model.) 3 Sheets—Sheet 1.







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(No Model.) 3 Sheets—Sheet 2.

Fig. 3.

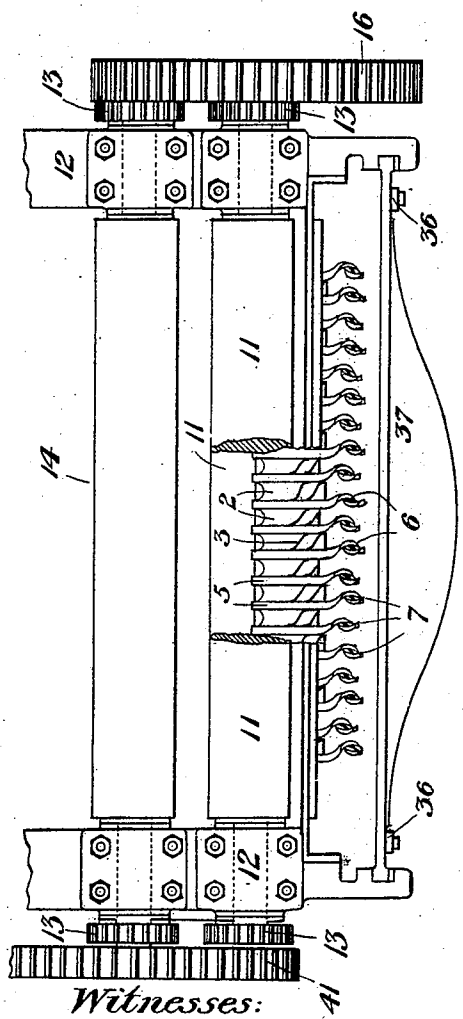
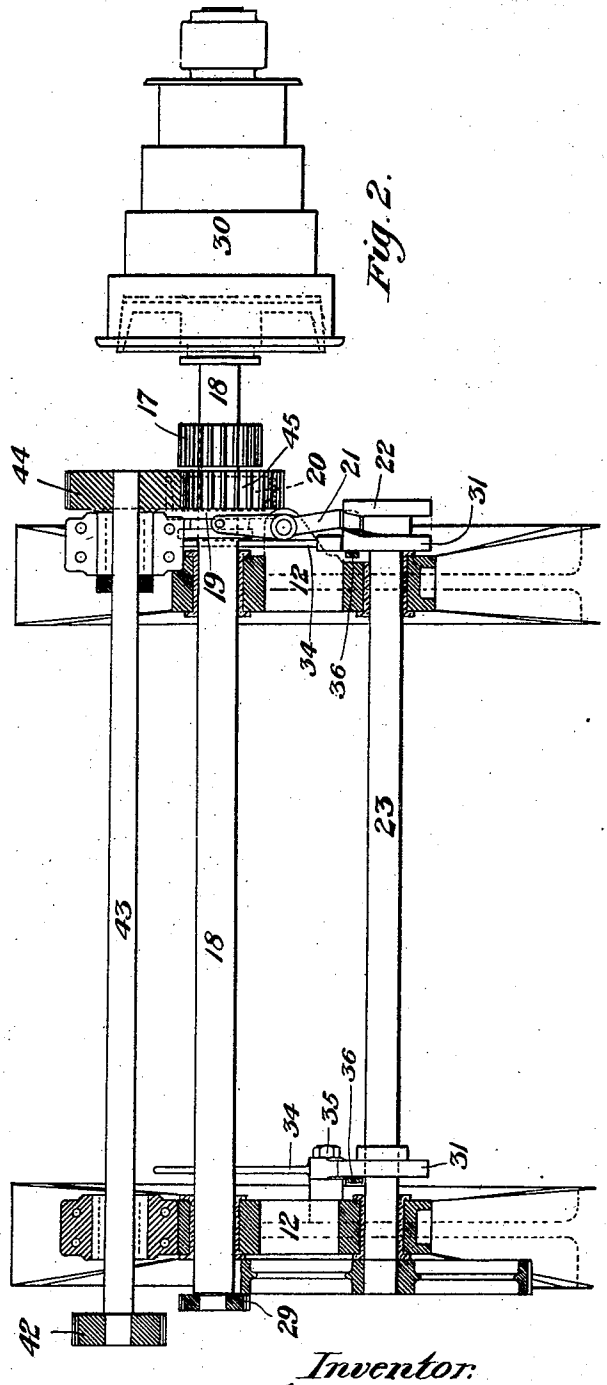


Fig. 2.



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Fig. 4.

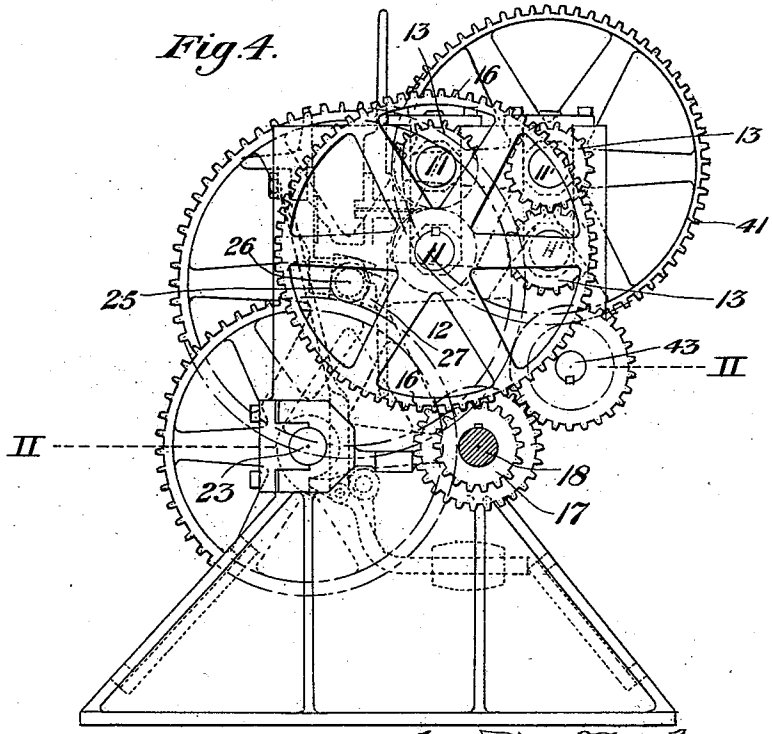
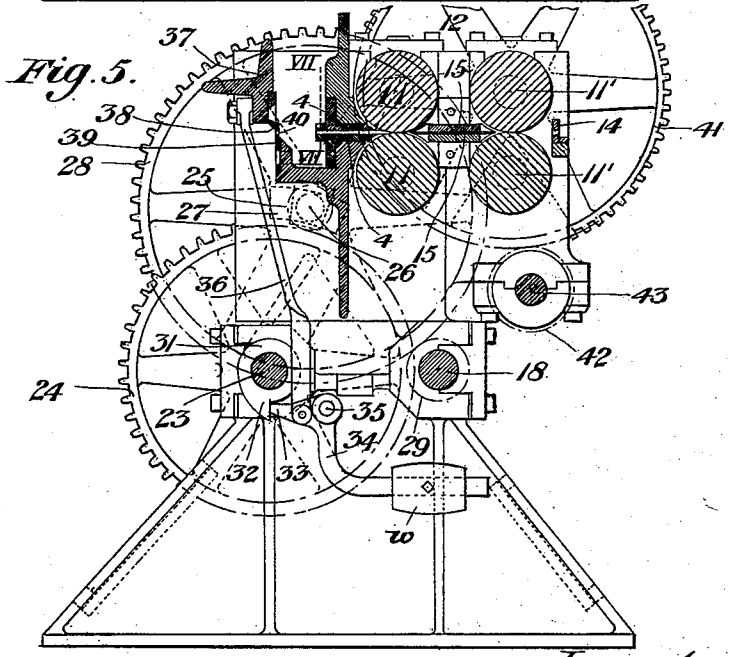


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM J. WRIGHT, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO JOHN S. SCULLY, OF PITTSBURG, PENNSYLVANIA.

WIRE-WEAVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 711,810, dated October 21, 1902.

Application filed January 18, 1902. Serial No. 90,289. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. WRIGHT, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Wire-Weaving Machines, of which the following is a specification, reference being had therein to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view in front elevation of my improved wire-weaving machine. Fig. 2 is a sectional plan view thereof, taken on the line II II of Fig. 4. Fig. 3 is a partial plan view, a portion of the upper front feeding-rolls being broken away and exposing the spindles and spiral guides. Fig. 4 is an end view of the machine. Fig. 5 is a cross-sectional view taken on the line V V of Fig. 1. Fig. 6 is a detail plan view illustrating the relative arrangement of the coils, guides, and spindles. Fig. 7 is a cross-sectional view on the line VII VII of Fig. 5, illustrating the arrangement of the spindles and the intervening coiling-guides. Fig. 8 is an enlarged sectional detail view of the frictional clutch.

My invention consists of an improved machine for weaving wire into fabric or netting composed of interfitting spiral coils whereby the full width of the netting desired may be made at one time of any desired number of wires simultaneously and continuously and in one operation. Heretofore in making wire-work of this description it has been the practice to form either a single spiral coil upon a forming-spindle by interweaving such coils in the last woven coil of a connected series or by making two interfitting spiral coils upon forming-spindles and then joining pairs of such interwoven coils by single coils and continuing such operation until the required width was obtained.

In the practice of my invention I employ a plurality of spindles 2, having the usual spiral grooves 3 3, which spindles are mounted in suitable housings or frame 4 at such a distance apart as will permit of the location between the spindles of separate coilers or guides 5, which for approximately the full length of the spindles are straight. These guides have on one side a groove 6 of sufficient size to admit the wires, but partly closed, so as to not allow the wires to escape outwardly, and at or beyond the delivery end of the spindles each of the guides is formed into a spiral 7 of the same pitch and relative position as the spiral groove 3 of the spindle, the groove 6 of the guides being maintained on the inner side, as shown.

By reason of the close arrangement of the pairs of spirals formed on the spindle 2 to the next adjacent pair similarly formed it will be seen that the spiral guide 7 may be located as to the alternate opposite spiral loops of such pairs without interference with the forward progress of the coiling members, so that when the independent spiral coils 8 are finally delivered from the ends of the guides 7 they will travel forward in the same relation to the coils 9 10 from spindles 2 and will interengage with such coils, as by reason of the close proximity of each independent coil 9 10 sufficient clearance is allowed for free engagement and interaction, and it will be seen that such assemblage and interaction of the coils will be continuous throughout the operation.

The forward feed of the wires is accomplished by means of upper and lower feed-rolls 11, mounted in suitable housings 12, the rolls being geared together by toothed gearing 13, so as to operate simultaneously and at uniform speed. The feed-rolls in the present case are arranged in duplicate, an auxiliary set of rolls 11′ being located immediately back of the main feeding-rolls, which auxiliary rolls are driven at the same peripheral speed as the others.

Any suitable guiding device, as a bar 14, suitably provided with intervening openings for the individual wires may be mounted across the outer face of the feeding-rolls 11′, while between such feeding-rolls and the rolls which introduce the wires to and force them through and over the spiral guides and coiling-spindles are located in suitable housings the guides 15, having intervening passes for the wire in proper position to correspond with the wire-passes of the guides and spindles.

Motion is transmitted to one of the feeding-rolls 11 through a toothed wheel 16, in engagement with a similar wheel 17, mounted upon the main shaft 18 and adapted to be thrown into gear with such shaft by means of the interfitting clutch members 19 20, the clutch member 19 being automatically operated by lever 21 in engagement with it and operated by cam 22 on shaft 23. The shaft 23 is rotated at slow speed through pinion 24 on its outer end in mesh with a driving-pinion 25, mounted upon the outer end of spindle 26, which is adjustably set in the segmental slot 27 in the housings, which permits the spindle to be set toward or from the main shaft 18, so as to permit of the insertion of gears of different sizes to vary the relative speed of the main shaft and feeding-rolls and such shaft 23, by which the shearing mechanism is operated, whereby the machine may be set to cut off different lengths, as desired. Power is imparted to the driving-pinion 25 through toothed wheel 28, mounted upon the spindle 26 and preferably secured to pinion 25, the pinion 28 being in mesh with driving-pinion 29 on the opposite end of the main shaft 18. Such main shaft is driven by belt or other connection through pulley 30 or other suitably-connected mechanism from any desired source of power.

Upon shaft 23, carrying cam 22, are mounted cams 31, one of such cams being formed integral with cam 22 adjacent to the bearing of the shaft, which cams 31 for three-quarters of their periphery are of uniform diameter, the other quarter being formed with the cam projection 32, which projection in the rotation of the cam depresses the end 33 of lever 34, pivoted at 35 to the frame, provided with a pivotally-connected pitman 36, attached to and for the purpose of operating the knife-beam 37, mounted in vertical slideways at each end of the machine. The lever 34 is provided with a counterweight *w*, by which the depressing action of the cam is reversed and the shear-beam raised.

The construction of the cam-lever and connections therefrom to the knife is, as shown, the same at each end of the machine to insure uniform action.

The shear-beam is provided with a knife 38, which slides upon the outer face of the stationary shear 39, through openings 40 of which the woven netting passes outwardly from the weaving-spindles.

The clutch 19 is held in engagement with the member 20, so as to transmit rotatory movement to the rolls to feed the wires during three-quarters of the revolution of the shaft 23 by reason of the relative arrangement of the cams 22 and 31, the clutch being thrown out of gear during the downward travel of the knife, so that the feeding-rolls remain stationary for one-quarter of the revolution of shaft 23 or until the shearing action is completed, the shearing-knife being raised simultaneously with the renewed clutching engagement produced by cam 22.

The auxiliary feeding-rolls, which are geared together in the same manner as are the front feeding-rolls by gearing 13, are operated through a toothed wheel 41 on the outer end of the upper feeding-roll 11′, such wheel 41 being in mesh with the driving-pinion 42 on the outer end of the counter-shaft 43, on the inner end of which is a pinion 44 in engagement with pinion 45 on the main shaft 18, such pinions 44 and 45 being intermittently actuated by the clutch-lever 21, as has been described, whereby feeding movement is transmitted to feeding-rolls 11 and 11′ at the same peripheral speed during the time when the shear-knife is raised, by which means the desired length of the woven fabric is fed forward until the feed-rolls are stopped by the clutch mechanism being drawn out of gear, at which time the shear-knife descends and cuts off the fabric, when the feeding action is again renewed. The especial advantage of this construction over the other types of machines employing but a single pair of feed-rolls is that in machines of this character where a great number of wires are fed forward between a single pair of rolls some of the wires, by reason of inaccuracy in their gage or spring of the roll, may not be tightly gripped by the feed-rolls, thus resulting in slippage. This difficulty I have overcome by the use of auxiliary rolls, as I have described, and it will be readily understood that, if desired, still further additional feeding-rolls may be provided, whereby to produce and insure the gripping action upon the wire. As thus constructed, the individual wires are fed inwardly between the rolls to the spindles, and the operation is continuous and automatic, the rolls feeding forward the desired length of netting, which is sheared off at suitable intervals, as I have described and without further attention from the operator than from time to time to renew the wire to the spools (not shown) as the same become emptied.

The machine is capable of a very greatly increased output over the present method of making wire-netting and will be appreciated by those familiar with the art. The machine is very compact and simple in construction, not liable to get out of order, and may be operated by one capable of exercising ordinary skill. The size of the mesh may be varied by the substitution of various sizes of spindles and guides, and such changes, as well as other variations, may be made by the skilled mechanic without departing from my invention; and I do not desire to be confined to the specific construction as shown and described, but to include all such changes and variations as within the scope of the following claims.

What I claim is—

1. In a machine for weaving wire, the com-

bination of a plurality of pairs of feed-rolls, a plurality of grooved spindles with intervening coiling-guides, means for operating the feed-rolls, and an intermittently-actuated shear.

2. In a machine for weaving wire the combination of a plurality of pairs of feed-rolls, a plurality of grooved spindles with intervening coiling-guides, a shear-knife, means for operating the feed-rolls and for periodically stopping them, and means for operating the shear-knife during the inaction of the feed-rolls.

3. In a machine for weaving wire, the combination of a plurality of pairs of feed-rolls, a plurality of grooved spindles with intervening coiling-guides in advance of the feed-rolls, a shearing-knife, and means for intermittently actuating the feeding-rolls and the shear-knife, respectively.

4. In a machine for weaving wire the combination of a plurality of pairs of feed-rolls, housings therefor, a main shaft, means for intermittently transmitting power from the main shaft to the feed-rolls, a plurality of grooved spindles with intervening coiling-guides in advance of the feed-rolls, a shear in advance of such coiling devices and means for intermittently actuating the shear.

5. In a machine for weaving wire, the combination of a plurality of feed-rolls, housings therefor, a main shaft, means for intermittently transmitting power from the main shaft to the feed-rolls, a plurality of grooved spindles with intervening coiling-guides in advance of the feed-rolls, a shear in advance of the coiling devices, a counter-shaft provided with cams, and means operated by such cams for intermittently actuating the shear-knife substantially as set forth.

6. In a machine for weaving wire, the combination of a plurality of pairs of feed-rolls, housings therefor, a main shaft, means for intermittently transmitting power from the main shaft to the feed-rolls, a plurality of grooved spindles with intervening coiling-guides in advance of the feed-rolls, a shear in advance of such coiling devices, a counter-shaft for intermittently actuating the shear-knife, and means for automatically raising the shear-knife, substantially as set forth.

7. In a machine for weaving wire, the combination of a main frame, a plurality of pairs of feed-rolls mounted therein, a plurality of grooved spindles with intervening coiling-guides in advance of the feed-rolls, a shear-knife in advance of the coiling devices, a constantly-revolving main shaft means for intermittently actuating the feed-rolls from such shaft, a counter-shaft driven by such main shaft, and means for intermittently actuating the shear-knife through such counter-shaft in conformity with the intermittent action of the feed-rolls, substantially as set forth.

8. In a machine for weaving wire, the combination of a main frame, a plurality of pairs of feed-rolls mounted therein, a plurality of grooved spindles with intervening coiling-guides in advance of the feed-rolls, a shear-knife in advance of the coiling devices, a constantly-revolving main shaft, means for intermittently actuating the feed-rolls from such shaft, a counter-shaft driven by such main shaft, means for intermittently actuating the shear-knife through such counter-shaft in conformity with the intermittent action of the feed-rolls, and means for retracting the shear-knife, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. WRIGHT.

Witnesses:
JAS. J. MCAFEE,
C. M. CLARKE.