W. W. McCALLIP, DEC'D.

N. W. McCALLIP, ADMINISTRATRIX.

WIRE FABRIC MACHINE.

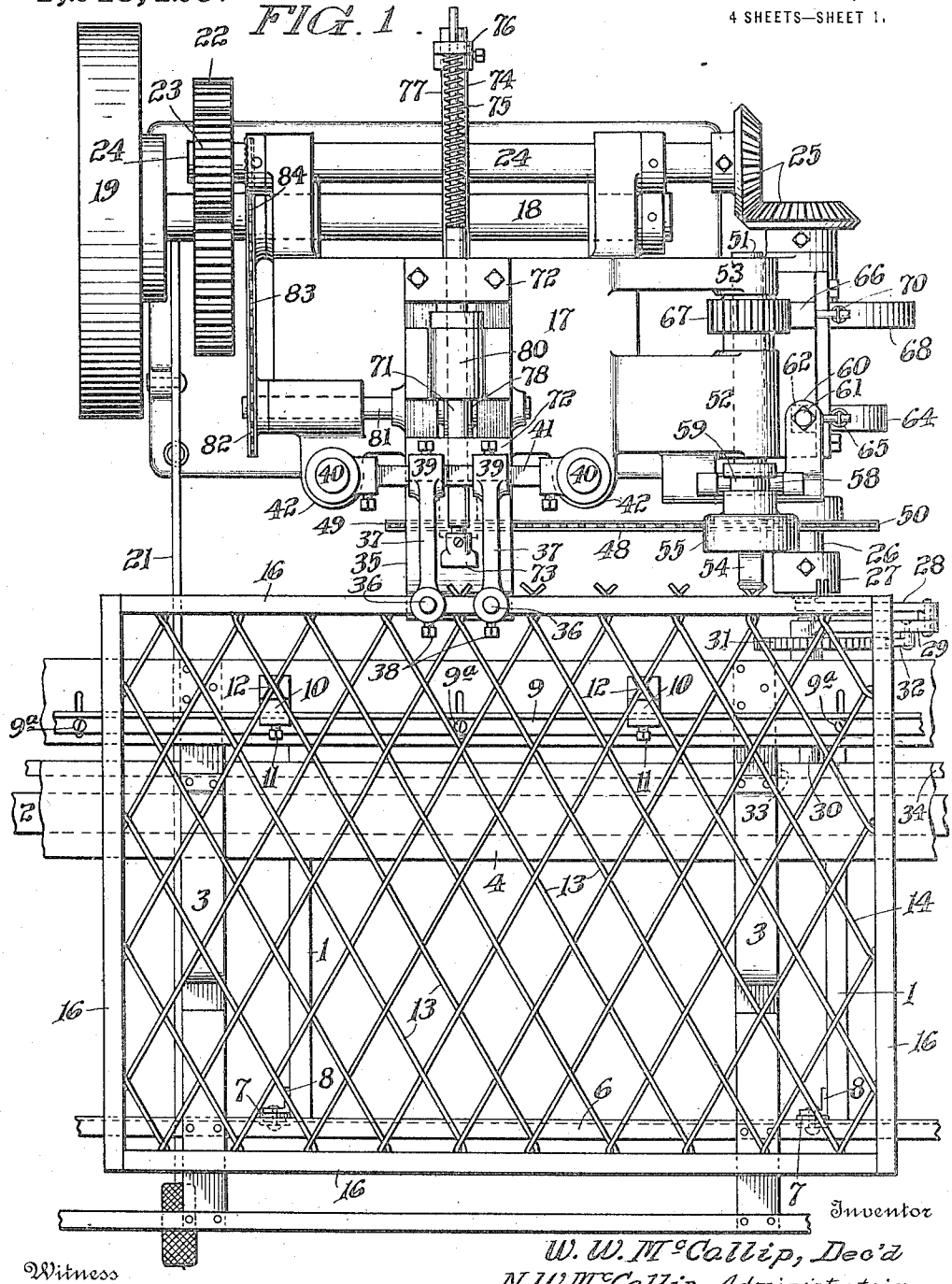
APPLICATION FILED AUG. 24, 1916.

1,248,425.

Patented Nov. 27, 1917.

4 SHEETS—SHEET 1.

FIG. 1.



Witness

Wm. Conway.

Inventor

W. W. McCallip, Dec'd

N. W. McCallip, Administratrix,

By Foster and Webster.

his Attorneys

W. W. McCALLIP, DEC'D.

N. W. McCALLIP, ADMINISTRATRIX.

WIRE FABRIC MACHINE.

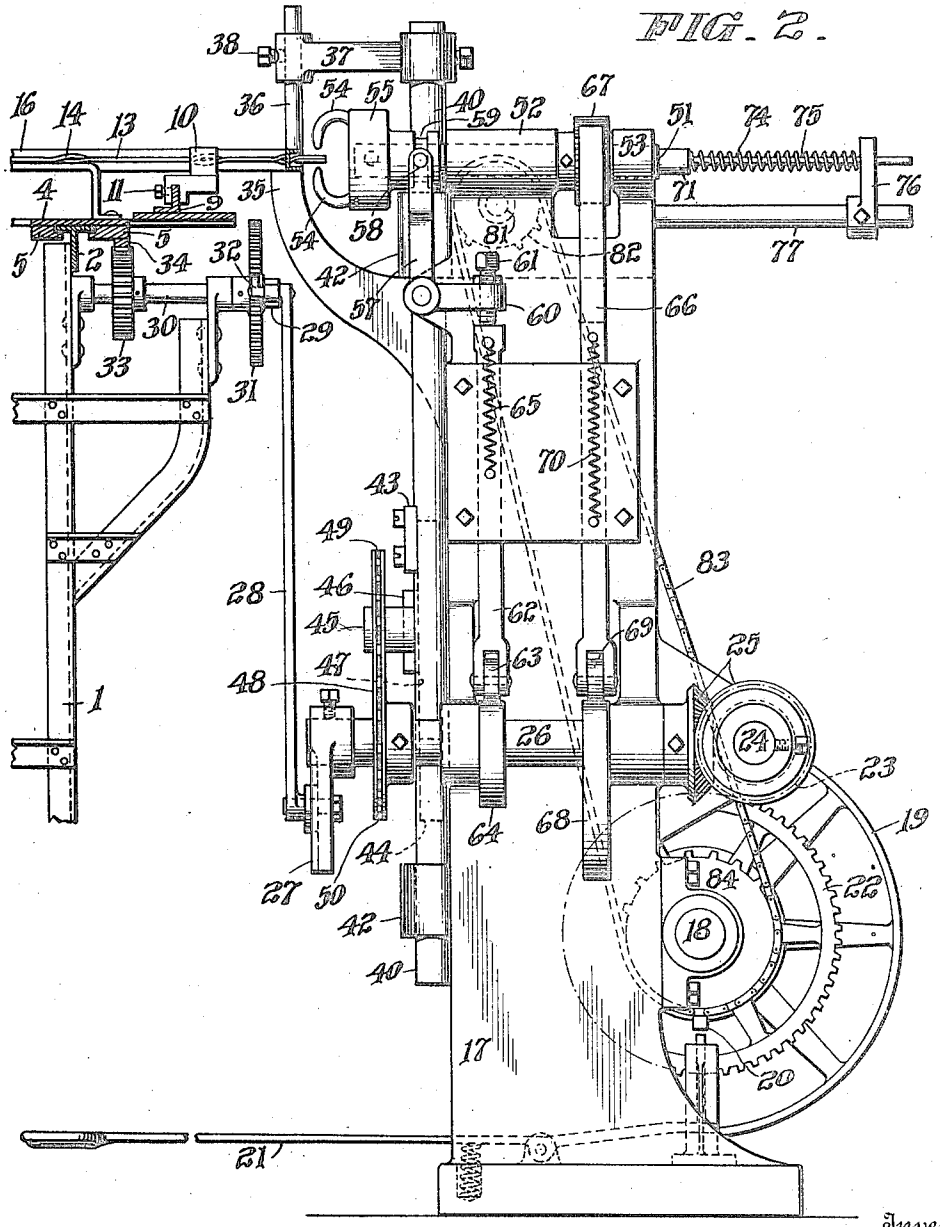
APPLICATION FILED AUG. 24, 1916.

1,248,425.

Patented Nov. 27, 1917.

4 SHEETS—SHEET 2.

FIG. 2.



Inventor

W. W. McCallip, Dec'd,

N. W. McCallip, Administratrix.

By Foster & Webster

his Attorneys

Witness

Wm. Conway.

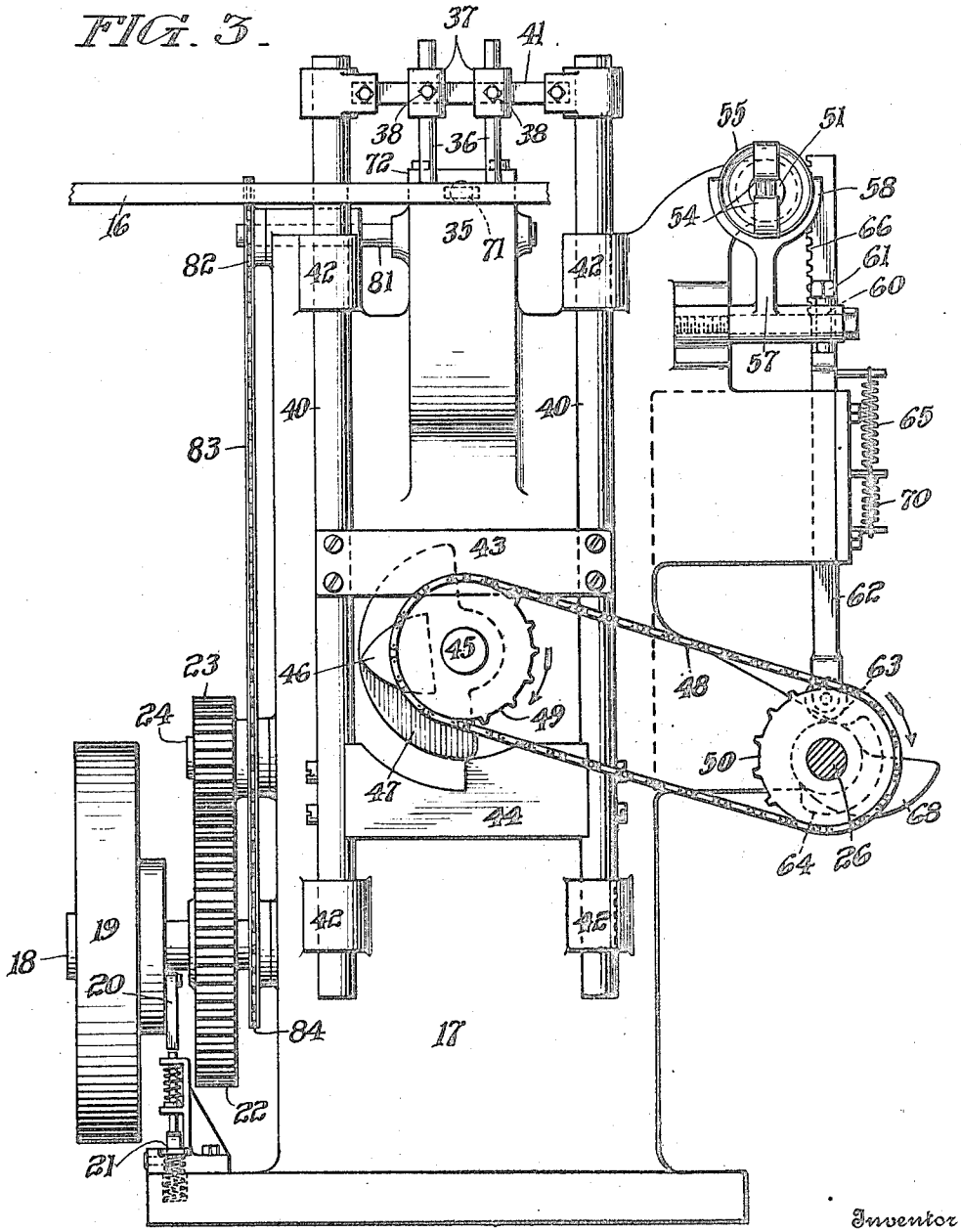
W. W. McCALLIP, DEC'D.
N. W. McCALLIP, ADMINISTRATRIX.
WIRE FABRIC MACHINE.
APPLICATION FILED AUG. 24, 1916.

1,248,425.

Patented Nov. 27, 1917.

4 SHEETS—SHEET 3.

FIG. 3.



Witness

Wm. Conway.

Inventor

W. W. McCallip, Dec'd,
N. W. McCallip, Administratrix.

By Foster & Webster
his Attorneys

W. W. McCALLIP, DEC'D.

N. W. McCALLIP, ADMINISTRATRIX.

WIRE FABRIC MACHINE.

APPLICATION FILED AUG. 24, 1916.

1,248,425.

Patented Nov. 27, 1917.

4 SHEETS—SHEET 4.

FIG. 4.

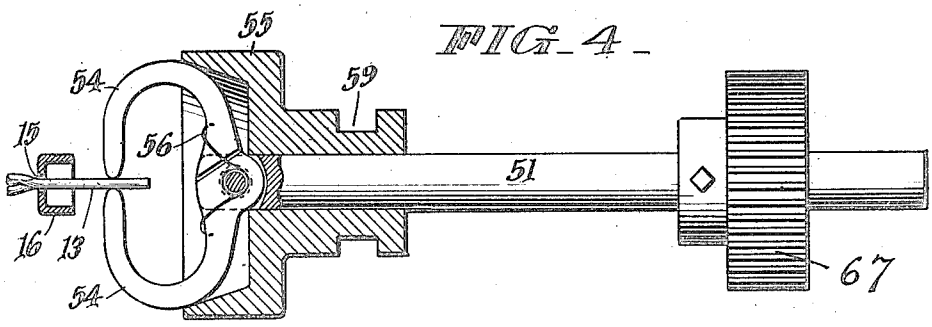
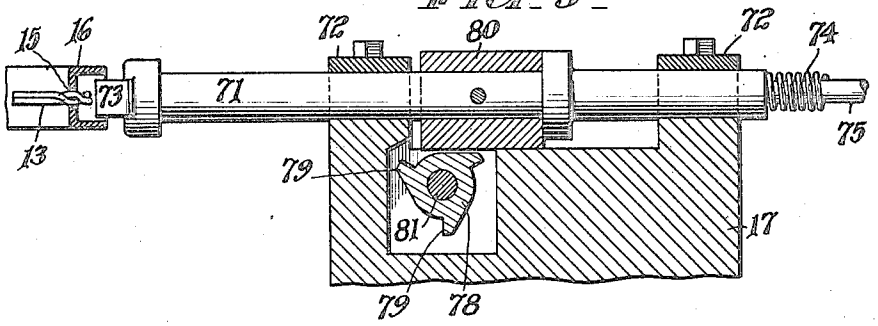


FIG. 5.



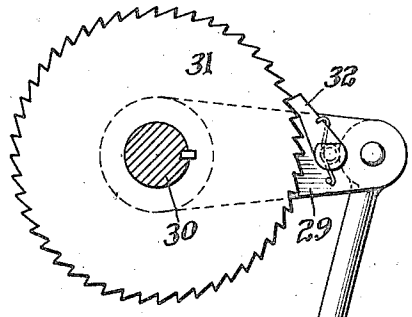


FIG. 6.

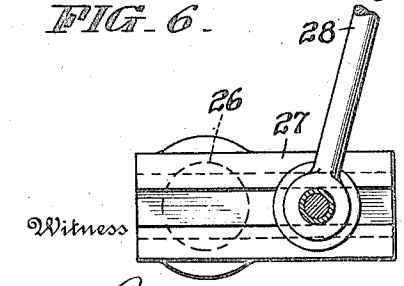


FIG. 7.

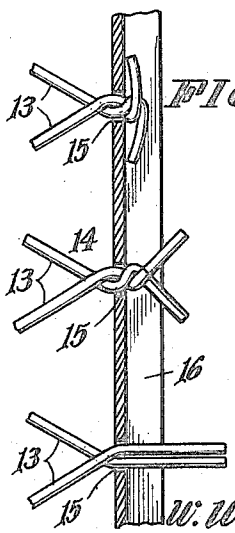
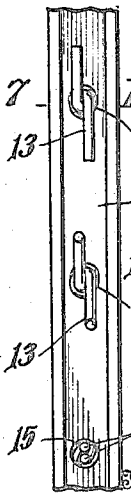


FIG. 8.



Witness

Inventor

W. W. McCallip, Dec'd

N. W. McCallip, Administratrix,

By Foster and Webster

his Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM W. McCALLIP, OF PHILADELPHIA, PENNSYLVANIA; NELLIE WRIGHT McCALLIP, ADMINISTRATRIX OF SAID WILLIAM W. McCALLIP, DECEASED, ASSIGNOR TO THE McCALLIP MANUFACTURING COMPANY.

WIRE-FABRIC MACHINE.

1,248,425. Specification of Letters Patent. Patented Nov. 27, 1917.

Application filed August 24, 1916. Serial No. 116,609.

To all whom it may concern:

Be it known that I, WILLIAM W. McCALLIP, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Wire-Fabric Machines, of which the following is a specification.

My invention relates to improvements in wire fabric machines, and more particularly to a machine for locking and clenching the wires in the groove of the channel bars constituting the frame of the wire mesh.

My invention has particularly to do with what is known in the art as diamond-mesh wire fabric, employing an outer frame of bars, usually channel bars through openings in which the ends of the wires are projected; and the function of my improved machine is to automatically lock the projecting ends of the wires together by imparting a twisting action thereto, and then clench the wires by means of an automatically operated hammer, which presses the ends of the wires against the inner face of the groove in the frame bar, and insures a positive lock as well as a smooth surface to the outer face of the frame.

With these and other objects in view my invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings:

Figure 1 is a top plan view illustrating my improvements;

Fig. 2 is a view, mainly in end elevation, but showing a portion of the conveying mechanism in section;

Fig. 3 is a view in elevation of the opposite end of the machine;

Fig. 4 is an enlarged view in longitudinal section illustrating my improved locking device;

Fig. 5 is a similar view illustrating my improved clenching device;

Fig. 6 is an enlarged detail view, partly in elevation and partly in section, showing the power transmission means to move the conveying mechanism;

Fig. 7 is an enlarged fragmentary view in section illustrating the positions of the wires during the operation of my improved machine; and

Fig. 8 is a view taken at right angles to Fig. 7.

My improved machine comprises four cooperating mechanisms as follows: first: a conveying mechanism, which supports and moves the screen with its frame; second: a clamping mechanism, which constitutes means for clamping the screen from time to time to hold it against movement; third: a locking or twisting mechanism, which constitutes means for locking the ends of the wires; and fourth: a clenching mechanism, which constitutes means for clenching the ends of the wire. These separate mechanisms will be described in their order.

Conveying mechanism.

1 represents a stationary frame having at its upper portion a horizontal T-rail 2. 4 represents a movable platform which has grooved rails 5 receiving the T-rail 2 and sliding thereagainst.

Platform 4 is provided with transverse bars 3 secured to the longitudinal angle bar 6, the latter mounted to run on rollers 7 carried by brackets 8 fixed to the supporting frame 1.

A longitudinal angle bar 9 is adjustably connected by screws 9^a with platform 4 so that the angle bar 9 may be moved laterally.

Supporting blocks 10 are adjustably secured longitudinally to the platform by means of screws 11 which clamp the blocks to the angle bar 9. The upper ends of these blocks 10 are grooved as shown at 12 to receive the wires 13 of the diamond mesh fabric 14, and support the diamond mesh fabric 14 during the operation of the machine. Some adjustment of blocks 10 is necessary to accommodate various forms, sizes and shapes of mesh.

The wires 13 of the mesh 14 are projected through openings 15 in the channel bars 16 constituting the frame of the mesh, and for convenience of description, I shall hereinafter refer to the entire structure comprising wires and frame bars as a "screen", except where it is necessary to refer to details.

The screen is supported in a horizontal position on the platform 4 and is moved by the platform step by step as will be hereinafter explained.

17 represents a machine standard which supports a drive shaft 18 having a drive pulley 19 thereon which is locked to the

shaft 18 by a suitable clutch indicated at 20 and controlled by a foot lever 21. A gear wheel 22 on drive shaft 18 meshes with a pinion 23 on a counter shaft 24, the latter connected by miter gears 25 with a shaft 26 at one end of the standard 17.

A crank arm 27 on shaft 26 is connected by a link 28 with an oscillating arm 29, the connection between the link and the arm 27 being adjustable to vary the movement of the arm 29.

The arm 29 is pivotally supported on a shaft 30 mounted on frame 1. This shaft 30 has a ratchet wheel 31 fixed thereto engaged by a spring-pressed pawl 32 on arm 29 to impart a partial rotary movement to the shaft at each oscillation of the arm.

A pinion 33 is provided on shaft 30 engaging a rack 34 on the platform 4 so that the motion imparted to the shaft causes an intermittent feed of the platform to move the screen the proper distance in each operation.

Clamping mechanism.

On the front of standard 17 a relatively heavy anvil 35 is located, on which a bar 16 of the screen frame rests. Above the anvil 35, a pair of vertically movable plungers 36 are located and are adjustably secured in forwardly projecting arms 37 by means of set screws 38.

The arms 37 have collars 39 adjustably secured on a horizontal square rod 41 carried by and adjustable on vertical rods 40 so that by reason of the construction above described, the plungers 36 can be adjusted to suit conditions.

The rods 40 are mounted to slide in guides 42 on standard 17 and are connected by cross bars 43 and 44 respectively. A short shaft 45 is supported by standard 17 and is provided with two cams 46 and 47 respectively which may constitute an integral casting if desired.

The cam 46 engages the upper cross bar 43 to elevate the clamping plungers 36, while the cam 47 engages the lower bar 44 to force the plungers downwardly and hold them in clamping engagement for the necessary length of time.

Motion is transmitted to the shaft 45 by means of a sprocket chain 48 connecting sprocket wheels 49 and 50 on shafts 45 and 26 respectively.

Locking mechanism.

In forming the screen, the wires of the diamond mesh are projected through the openings 15 in bars 16 and are approximately parallel with each other as shown at the lower end of Fig. 7, and these projecting ends of the wires are locked by twisting them together as will now be explained.

A horizontal rotary shaft 51 is supported in bearing sleeves 52 and 53 at the upper portion of standard 17. This shaft at its forward end supports a pair of pivoted jaws 54 which constitute pincers to grip the wires 13. These jaws 54 are moved toward each other by means of a sliding sleeve 55 and are separated by a suitable spring 56 when permitted.

The sleeve 55 is moved longitudinally on shaft 51 by means of a bell-crank-lever 57, the latter supported on standard 17, and having a bifurcated member 58 engaged in an annular groove 59 in sleeve 55. The horizontal shorter member 60 of lever 57, has a set-screw 61 which is engaged by a vertically movable plunger 62. This plunger 62 is provided at its lower end with a roller 63 engaging a cam 64 on shaft 26 and held in engagement with the cam by means of a coiled spring 65.

Rotary motion is imparted to the shaft 51 by means of a vertically movable rack-bar 66 meshing with the pinion 67 on shaft 51, and moved upwardly by means of a cam 68 on shaft 26. The cam 68 engages a roller 69 at the lower end of rack-bar 66 and a coiled spring 70 exerts a downward pressure on the rack-bar 66 to hold roller 69 in engagement with cam 68.

When the jaws 54 are operated to grip the wires 13, shaft 51 is turned to lock the wires by twisting them as shown at the middle of Fig. 7. This operation leaves the ends of the wires flared apart at an angle to each other.

Clenching mechanism.

After the wires are locked as above explained, the screen is moved to present the wires to my improved clenching mechanism, and are then in a position for clenching, which operation is performed by means of a reciprocating hammer 71.

This hammer is supported in suitable bearings 72 at the upper portion of standard 17 and at one end carries a hammer head 73 of the proper shape to enter the channel bar 16 and force the ends of the wires apart and against the inner wall of the grooved bar, as shown at the top of Fig. 7.

A coiled spring 74 is located around the reduced rear end 75 of hammer 71, and moves the hammer on its working stroke when permitted. The outer end of spring 74 engages an arm 76 which is adjustable on a rod 77 to permit the tension of the spring to be regulated so as to give the desired stroke.

The hammer 71 is moved rearwardly against the action of spring 74 by means of a rotary dog 78 which has a plurality of teeth 79 thereon adapted to engage the end of a sleeve 80, fixed to the hammer in any approved manner.

The dog 78 is secured to a shaft 81 which

projects to one side of the standard 17 and is provided with a sprocket wheel 82, the latter connected by a chain 83 with a sprocket wheel 84 on drive shaft 18.

The operation is as follows: As all of the above described mechanisms are controlled and operated by a single drive shaft, all of the power transmission mechanisms can be so adjusted and regulated as to properly time the operations of the several mechanisms so that the machine operates as an entirety, and performs its several functions properly.

As shown clearly in Fig. 1, while one pair of wires are being locked, another pair are in position for clenching and when one operation is completed, the screen is automatically moved to present other wires for the operations; and I am enabled to rapidly, uniformly, and efficiently carry out the functions of the machine.

Various slight changes may be made in the general form and arrangement of parts described without departing from my invention and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A machine of the character described, comprising means for supporting a bar having a pair of wires projecting therethrough, and two other means, one for twisting and the other for spreading the ends of the wires apart after they are twisted.

2. A machine of the character described, comprising means for supporting a bar having a pair of wires projecting therethrough, means for locking the wires by twisting them, and other means independent of the locking means for clenching the wires by separating their ends.

3. A machine of the character described, comprising means for supporting a screen and its frame, means for locking the ends of the wires at the edges of the screen, and means independent of the locking means for clenching the wires after the locking operation.

4. A machine of the character described, comprising means for supporting a screen and its frame, means for clamping the screen against movement, means for locking the wires at the edges of the screen, and means independent of the locking means for clenching the wires after the locking operation.

5. A machine of the character described, comprising a conveyer, means for supporting a screen and its frame on the conveyer, means for clamping the screen and conveyer against movement, means for locking the wires of the screen against the edges of its frame, and means independent of the locking means for clenching the wires after they are locked.

6. A machine of the character described, comprising a conveyer adapted to support a screen and its frame, an anvil over which the screen frame is moved, clamping means adapted to engage the screen frame and clamp it on the anvil, and two means, one for locking and the other for clenching the wires of the screen while the frame is held by the clamping means.

7. A machine of the character described, comprising a conveyer adapted to support a screen, an anvil over which the screen is moved, clamping means adapted to engage the screen and clamp it on the anvil, a locking mechanism comprising a pair of jaws adapted to grip the wires of the screen and twist them together, and a clenching mechanism adapted to force the wires apart after they are locked.

8. A machine of the character described, comprising a conveyer adapted to support a screen, an anvil over which the screen is moved, clamping means adapted to engage the screen and clamp it on the anvil, a rotary shaft, a pair of jaws carried by said shaft and adapted to engage and lock the wires of the screen by twisting them, and a reciprocating hammer adapted to engage the wires and force them apart after they are locked.

9. A machine of the character described, comprising a conveyer adapted to support and move a screen and its frame, means for clamping the screen and conveyer against movement, means for locking the ends of the wires by twisting them together, and a reciprocating hammer spring-pressed in one direction, and positively moved in the other to cause the ends of the locked wires to be forced apart and against the sides of the screen frame.

10. A machine of the character described, comprising a conveyer, blocks on the conveyer adapted to support a wire mesh screen and its frame, means for imparting a step-by-step feed to the conveyer, a clamping mechanism to hold the screen and conveyer against movement, means for locking the ends of the wires against the outer face of the screen frame, means for clenching the wires after they are locked, and a single drive shaft transmitting motion to all of said mechanisms.

11. A machine of the character described, comprising an anvil, vertically movable clamping plungers adapted to clamp the frame of the screen upon the anvil, parallel rods supporting the plungers and having cross-bars thereon, and cams adapted to engage the respective cross-bars and positively move the plungers in both directions.

12. A machine of the character described, comprising an anvil, vertically movable clamping plungers adapted to clamp the frame of a screen upon the anvil, parallel rods supporting the plungers and having cross-bars thereon, cams adapted to engage the respective cross-bars and positively move the plungers in both directions, and two means, one for locking and the other for clenching wires against the outer edge of the frame while the latter is held by said plungers.

13. A machine of the character described, comprising a frame having a screen thereon, a T-rail, a platform sliding on the T-rail, a longitudinal angle bar adjustable laterally on the platform, blocks adjustable longitudinally on the angle bar and having recesses therein to receive the wires of the screen, means for clamping the screen against movement, and means for locking the wires against the outer face of the screen frame.

14. A machine of the character described, comprising a frame, a T-rail, a platform sliding on the T-rail, a longitudinal angle bar adjustable laterally on the platform, blocks adjustable longitudinally on the angle bar and having recesses therein to receive the wires of the screen, a stationary anvil over which the screen frame is moved, clamping means adapted to clamp the frame on the anvil, and two means, one for locking and the other for clenching the wires of the screen while the latter is clamped on the anvil.

15. A machine of the character described, comprising means for supporting a screen, a rotary shaft, a pair of pivoted jaws on one end of the shaft adapted to engage the wires to be locked, a sliding sleeve on the shaft controlling the gripping action of the jaws, and means for turning the shaft while the jaws are in clamping position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM W. McCALLIP.

Witnesses:
ELEANOR F. MURRAY,
WILLIAM CONWAY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."