Sept. 8, 1936. A. E. BLASHILL 2,053,260

WIRE FEEDING MECHANISM

Original Filed June 18, 1931 3 Sheets-Sheet 1

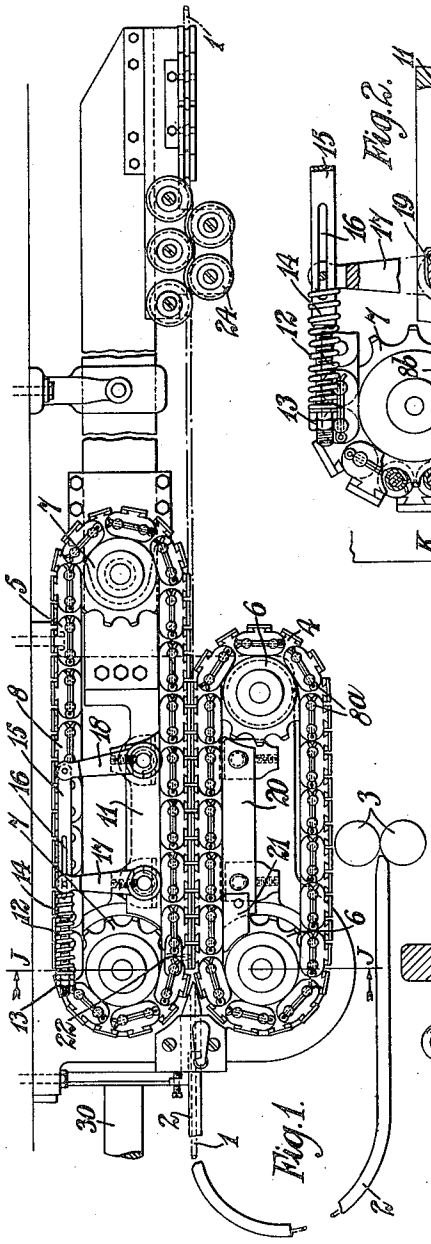


Fig. 1.

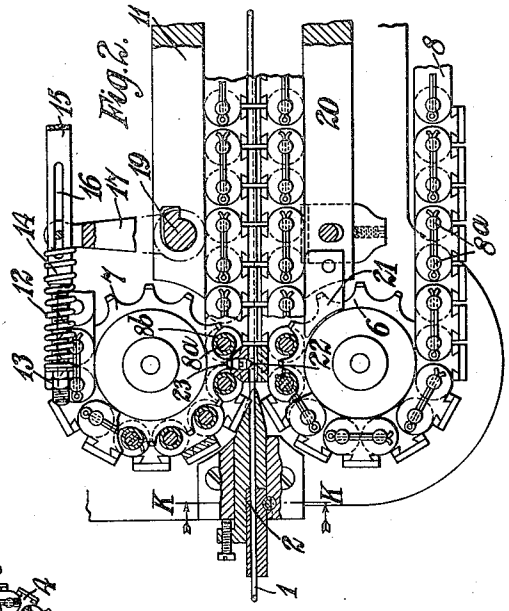


Fig. 2.

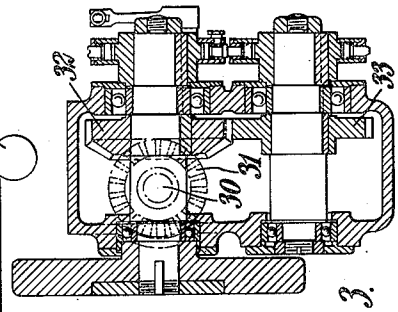


Fig. 3.

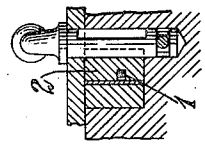


Fig. 4.

A. E. Blashill
INVENTOR

By: Glascock Downing & Seabold
Attys.

Sept. 8, 1936. A. E. BLASHILL 2,053,260

WIRE FEEDING MECHANISM

Original Filed June 18, 1931 3 Sheets-Sheet 2

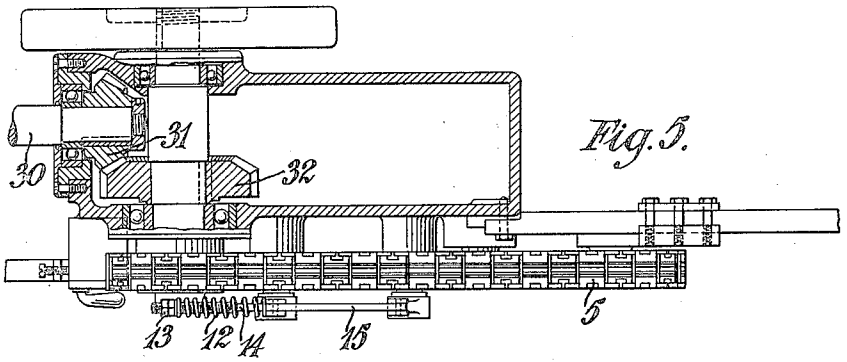


Fig. 5.

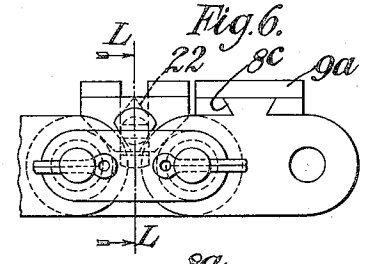


Fig. 6.

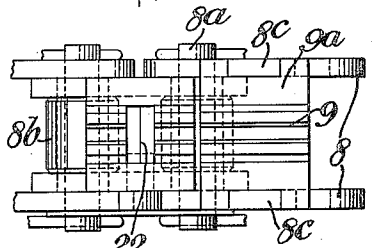


Fig. 7.

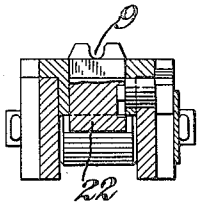


Fig. 8.

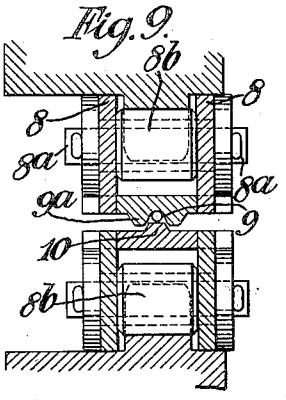


Fig. 9.

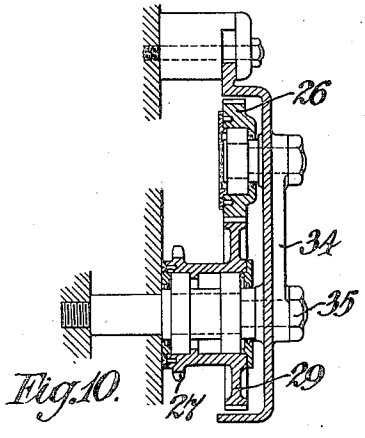


Fig. 10.

A. E. Blashill
INVENTOR

By: Glascock Downing & Seibold
ATTYS.

Sept. 8, 1936. A. E. BLASHILL 2,053,260

WIRE FEEDING MECHANISM

Original Filed June 18, 1931 3 Sheets-Sheet 3

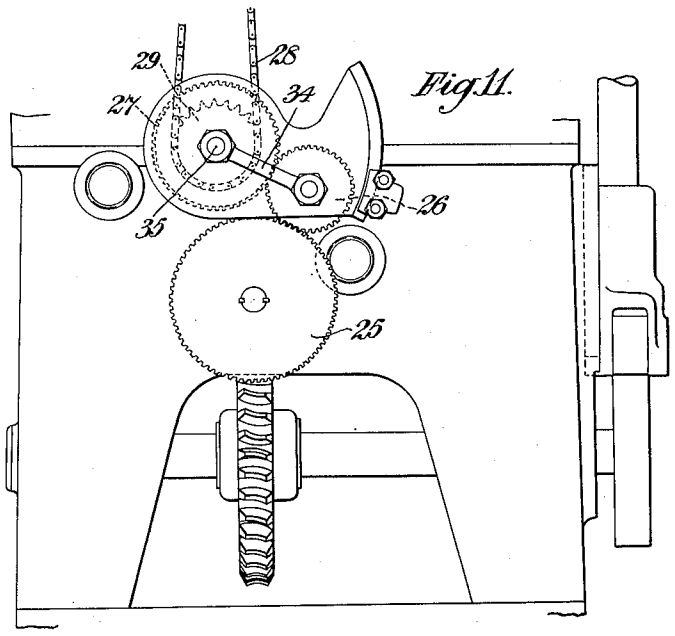


Fig. 11.

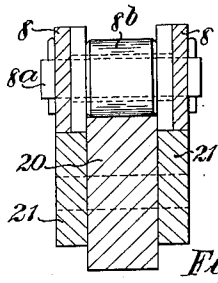


Fig. 12.

A. E. Blashill
INVENTOR

By: Glascock Downing & Seibold
Attys.

Patented Sept. 8, 1936 2,053,260

UNITED STATES PATENT OFFICE

2,053,260

WIRE FEEDING MECHANISM

Arthur Ernest Blashill, Withington, Manchester, England

Original application June 18, 1931, Serial No. 545,321. Now Patent No. 1,996,061 dated April 2, 1935. Divided and this application January 14, 1935, Serial No. 1,795. In Great Britain June 24, 1930.

6 Claims. (Cl. 140—125)

This invention relates to mechanism adapted for the feeding and severing of wire or the like and has for its object to provide improved mechanism of this character whereby the wire or the like may be fed continuously and severed whilst being fed.

This application is a division from my other application Serial No. 545,321 filed June 18, 1931, and patented April 2, 1935, under Patent No. 1,996,061.

The invention consists in the various features of combination described, illustrated and claimed.

In the accompanying drawings:—

Figure 1 is a front elevation of one embodiment of the invention;

Figure 2 is a fragmentary view partly in section of the left-hand side of the mechanism illustrated in Figure 1;

Figure 3 is a sectional elevation taken on the line J—J in Figure 1;

Figure 4 is a fragmentary part sectional view taken on the line K—K in Figure 2;

Figure 5 is a part sectional plan view of the mechanism illustrated in Figure 1;

Figures 6, 7 and 8 are detail views of the cutter of the feeding mechanism illustrated in Figures 1 to 5, Figure 8 being a cross section on the line L—L in Figure 6;

Figure 9 is a cross section on an enlarged scale showing the wire gripped between a pair of links of the feeding mechanism;

Figure 10 is a fragmentary sectional view showing the mechanism employed for varying the spacing between the stay wires;

Figure 11 is a front view on an enlarged scale of the mechanism illustrated in Figure 10, and

Figure 12 is a vertical section through the parts 20, 21 and the roller and chain portion above.

In carrying the invention into effect in one convenient manner and as illustrated in the drawings, the wire 1 is fed through a tubular guide 2 (Figure 1) to rollers 3 and mechanism is provided which operates upon the length of wire as it is drawn from its reel or holder so as to cut the wire into any required predetermined and uniform lengths which are thereafter taken up by the said rollers 3 and fed in succession into the required position. Such feeding mechanism for the wire consists essentially of a pair of endless chains 4, 5 which are arranged one above the other such that the chains are adapted to coact with one another so as frictionally to grip the wire and feed it into the said tubular guide which is shaped so as to lead the severed lengths of wire to a point where they may be taken up by the said rollers.

The said chains are supported by sprockets 6, 7 which are adapted to be driven in unison from any convenient power source. The chains may be similar in construction and, in the particular example illustrated, each chain consists of a series of links 8 which are flexibly connected together by pins 8^a with their ends overlapping and the links of the upper chain are formed with grooves 9 (Figure 9) so that there is formed a longitudinal groove in the peripheral surface of this chain and the links of the other chain are formed with projections 10 so that a longitudinal projection is formed on the peripheral surface of this chain which is arranged to co-operate with the longitudinal groove in the other chain to form a closed recess in which the wire is accommodated and fed by the frictional gripping of the wire by these parts of the chains. The said pins 8^a have rollers 8^b mounted thereon which engage the teeth of the sprocket wheels. The links 8 comprise pairs of spaced plates arranged parallel with each other (Figures 7 and 9) and each of said plates has a dovetail portion 8^c on the side remote from the sprocket wheels, which dovetail portions receive plates 9^a and securely support the latter on the said plates of the chain links, the plates 9^a on the upper chain having the groove 9 formed in the outer surfaces thereof and the plates 9^a on the lower chain having the projections 10 formed on the outer surfaces thereof.

Means is provided in association with said chains which is adapted to cause the chains to press tightly against and frictionally engage the wire so that upon movement of the chains through this active zone the said wire will be fed continuously towards the rollers 3 at a speed substantially equal to the peripheral speed of the chains. Such means comprises a weighted movable member 11 which is adapted to bear upon the upper surface of the lower run of the upper chain and the degree of pressure exerted by this member is controlled by a spring 12 and nut 13 which is mounted upon a screw rod 14. Said screw rod is formed with a part 15 which is slotted at 16 in which there is accommodated a pin carried by a link 17 which has a pivotal connection with said groove and with the pressure member 11, another link 18 being pivotally connected to the end of the part 15, which link is also pivotally connected to the other end of the pressure member. Said links are formed with feet 19 (Figure 2), the projecting ends of which

tend to exert a pressure upon the member 11 and the degree of pressure exerted can be adjusted by operation of the adjusting mechanism above referred to.

The upper run of the lower chain is adapted to be supported by means of a fixed member 20 of substantially the same width as the rollers 8b and disposed between the chain links 8 upon either side of the rollers. It will be appreciated that the end of this support nearest the sprocket 6 cannot extend into the path of the sprocket teeth so that this support cannot function to support the chain links for their entire travel to the cutter 22 (to be described later). The support of the chain links up to this point is, however, essential and there are accordingly provided the parts 21 which are parallelly disposed in spaced relationship and are at one end fixed or pivotally connected to the forward end of the fixed member 20. These parts 21 are disposed beneath the chain links 8 and are adapted to support the latter up to the point where the cutter operates to sever the wire and so ensure that the links travel in a straight line to this point.

The rollers 8b above referred to as being mounted upon the pins 8a connecting the links of the chains are preferably arranged to ride upon the said fixed and movable members 11, 20 and to take up the pressure of the latter.

One of the principal functions of this mechanism consists in cutting the wire into predetermined and uniform lengths and this is accomplished by means of a cutter 22 (Figures 6 and 7) which is carried in one of the links of the upper chain and is adapted automatically to be propelled outwardly at an appropriate moment, the cutter being arranged for example so as to be projected into cutting position by the action of the sprocket teeth (see tooth 23 in Figure 2) of the left-hand sprocket wheel 6 during movement of the chains so as to sever a length of wire from the main wire.

The arrangement and operation of the above parts is such that the chains operate to feed uniform lengths of wire at a speed consistent, for example, with the required speed of operation of a machine which uses the wire, without stopping the feed of the wire.

The rollers 24 (Figure 1) operate to straighten the wire and feed it to the chains. The severed lengths of wire as they leave the guide 2 are taken up by the rollers 3 previously described and the speed of rotation of these latter rollers is preferably chosen such that they have fifty per cent. greater peripheral speed than the rate of feed of the chains, the rollers 3 being arranged to be driven synchronously with a machine to be supplied with the wire.

The wire may be cut into any required predetermined lengths by simply varying the lengths of the feeding chain which carries the cutter 22 and adjusting the distances between the sprocket wheels 7 accordingly and also the distance between the actual cutting zone and the take-up feed rollers 3, the latter measurement being conveniently slightly less than each severed wire length.

Mechanism for driving the chains may conveniently comprise gearing 25, 26, 27 (Figures 10 and 11), chain 28 which is connected between the sprocket wheel 29 and another sprocket wheel (not shown), said latter wheel being carried upon a shaft 30 (Figures 1, 3 and 5) which also carries a bevel wheel 31 which drives the left-hand sprocket of the upper chain through a bevel wheel 32 carried upon the shaft carrying said latter chain sprocket wheel. The lower chain is driven by means of the gear wheel 33 (Figure 3) which is carried upon the shaft carrying the left-hand sprocket wheel of the lower chain and meshes with the bevel and spur wheel 32.

When the apparatus is adjusted so as to vary the length of the wire lengths the gear wheel 25 (Figure 11) may also be changed and the arrangement of this gearing is preferably such that the wheel 25 makes a predetermined definite number of revolutions for each length of wire cut and the number of teeth on this gear wheel 25 represents in inches, or any other desired measure, the length of wire which is required to be fed, each tooth on the wheel representing a unit measure of the length of wire. The gear wheel 26 is carried upon a radius arm 34 which is pivotally connected upon a shaft 35 carrying the gear wheel 27 and permits the ready replacement of the gear wheel 25 by a different size wheel.

I claim:

1. Mechanism for feeding wire and the like comprising a pair of endless feeding elements superimposed one upon the other, a sprocket wheel for supporting the lower element at its discharge end and means engaged by the latter element for supporting the successive portions of the top run of the lower element, said means engaging and supporting the said portions during their passage through the space swept by the sprocket teeth.

2. Mechanism for feeding wire and the like comprising a pair of endless elements superimposed one upon the other, means for imparting motion to such elements to feed the wire which is gripped between their adjacent plies, a sprocket wheel for supporting the lower element at its discharge end, a cutter for the wire incorporated in the feeding elements so as to sever the wire as it is fed, and means engaged by the lower element for supporting the successive portions of the top run of the lower element, said means engaging and supporting the said portions during their passage through the space swept by the sprocket teeth.

3. Mechanism for feeding wire and the like comprising a pair of endless chains superimposed one upon the other so that the wire may be gripped between adjacent plies of the chains, means for imparting motion to the chains to feed the wire, means for supporting the chains at their ends comprising a sprocket wheel for the discharge end of the lower chain, means embodied in the chain for severing the wire as it is fed near the point of exit of the wire from the chains and means engaged by the lower element adapted to support the successive portions of the top run of the lower chain, said means engaging and supporting the said chain portions during their passage through the space swept by the sprocket teeth.

4. Mechanism for feeding wire and the like comprising a pair of endless chains superimposed one upon the other so that the wire may be gripped between adjacent plies of the chains and fed longitudinally of itself, means for imparting motion to the chains, a sprocket wheel for supporting the discharge end of the lower chain and means adapted to support the top run of the lower chain in a straight line, including means adapted to engage and support the successive portions of the top run of the lower chain during their passage through the space swept by the sprocket teeth.

5. Mechanism for feeding wire and the like comprising a pair of endless chains superimposed one upon the other so that the wire may be gripped between adjacent plies of the chains and fed longitudinally of itself, means for imparting motion to the chains, a sprocket wheel for supporting the discharge end of the lower chain and means for exerting pressure upon the wire-gripping portions of the chains, comprising a fixed member adapted to support the top run of the lower chain and having portions engaged by the lower chain which extend to the said sprocket wheel so as to afford support for this chain as it passes through the space swept by the sprocket teeth and a member adapted to exert pressure upon the bottom run of the top chain.

6. Mechanism as claimed in claim 1 having a cutter carried by the upper endless feeding element adapted to coact with and against a part of the lower endless feeding element while the latter is engaged and supported by the said means in its passage across the space swept by the sprocket teeth.

ARTHUR ERNEST BLASHILL.