

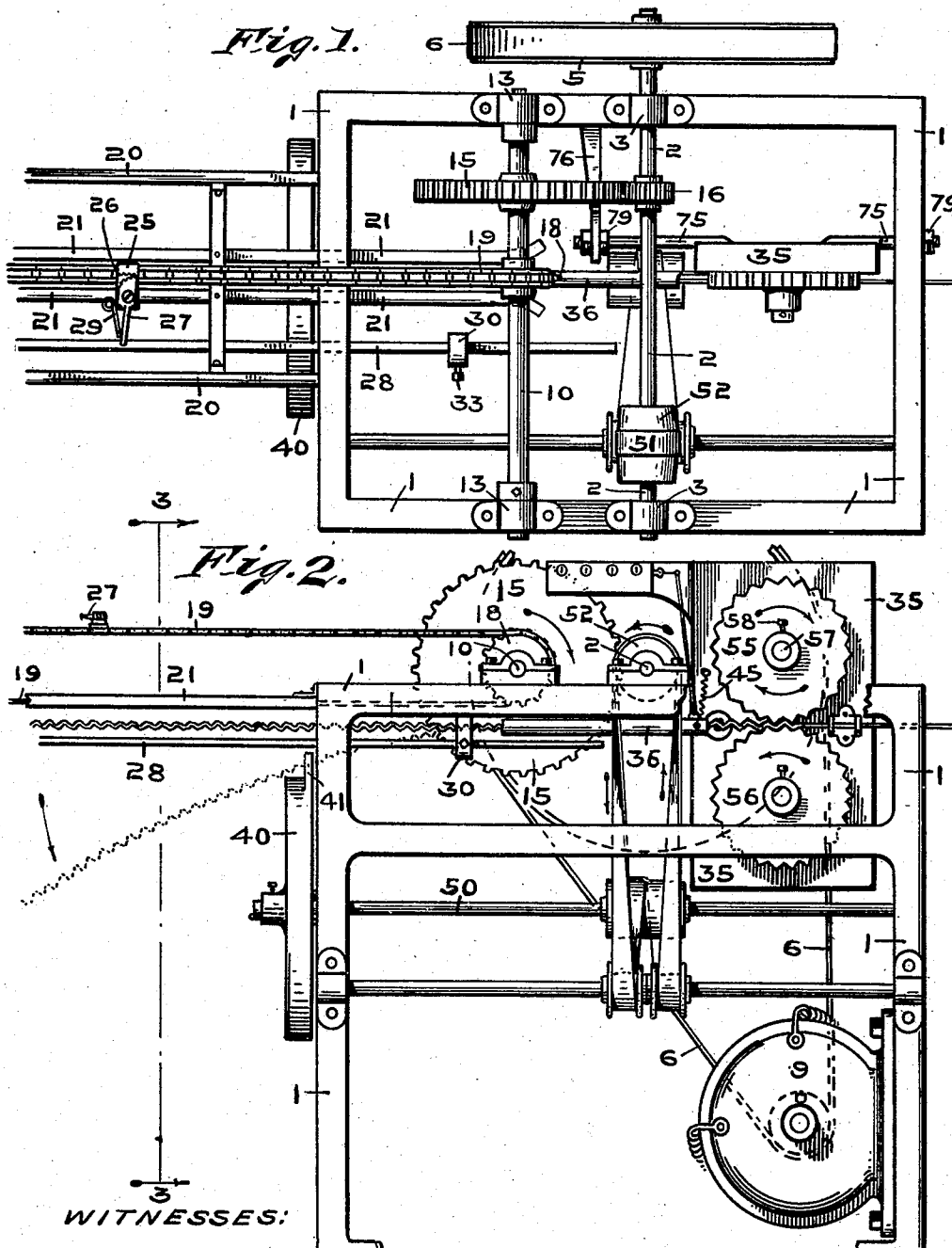
No. 873,200.

PATENTED DEC. 10, 1907.

J. L. ALLEY.
WIRE CRIMPING MACHINE.

APPLICATION FILED DEC. 28, 1906.

2 SHEETS—SHEET 1.



L. B. Woerner
J. C. Dyner.

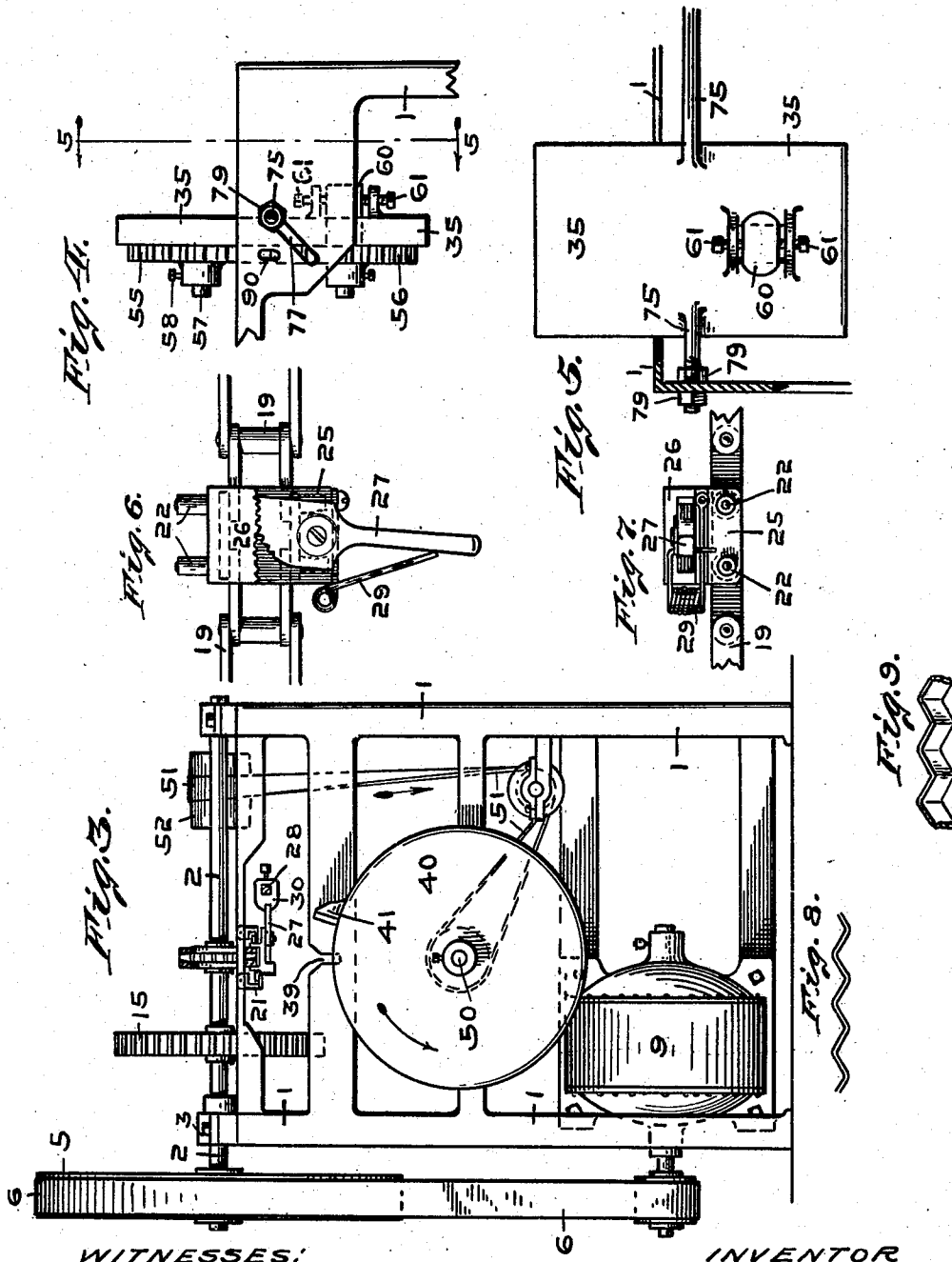
Jesse L. Alley,
By Minton & Koerner
ATT'YS.

No. 873,200.

PATENTED DEC. 10, 1907.

J. L. ALLEY.
WIRE CRIMPING MACHINE.
APPLICATION FILED DEC. 26, 1906.

2 SHEETS—SHEET 2.



WITNESSES:

L. B. Moerner.

F. C. Dyner.

INVENTOR

Jesse L. Alley,

By *Wintum Moerner*
ATT'YS.

UNITED STATES PATENT OFFICE.

JESSE L. ALLEY, OF INDIANAPOLIS, INDIANA.

WIRE-CRIMPING MACHINE.

No. 873,200.

Specification of Letters Patent.

Patented Dec. 10, 1907.

Application filed December 26, 1906. Serial No. 349,511.

To all whom it may concern:

Be it known that I, JESSE L. ALLEY, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Machines for Crimping Wire, of which the following is a specification.

This invention relates to a machine for crimping wire that is employed in making cages for elevators, protecting elevator shafts, screenings for skylights, and to protect desks etc. in banks and offices; and the object of the invention is to provide a machine which will automatically, uniformly and accurately form each crimp in the wire, so that when the wires are plaited together, the meshes will all be alike in both shape and size.

The object consists, further, in a machine for crimping wire wherein the wire is crimped and cut into uniform lengths when discharged therefrom.

The object consists, further, in a machine of the above character wherein the cutting device is mounted in an adjustable manner so that wire of any given length can be cut.

The object consists, further, in a machine of the above character wherein the size of the crimps may be changed in the wire, so that various kinds of protecting screens can be produced.

I accomplish the several objects of the invention by the mechanism illustrated in the accompanying drawings, in which

Figure 1 is a top or plan view of a wire crimping machine embodying the several features of my invention. Fig. 2 is a side elevation of the construction shown in Fig. 1. Fig. 3 is an end elevation of the machine on the dotted line 3—3 in Fig. 2. Fig. 4 is a fragmentary detail in elevation of an upper corner of the machine, showing the means for changing the position of the crimping disks. Fig. 5 is a rear elevation of the said construction on the dotted line 5—5 in Fig. 4. Fig. 6 is a detail view in plan of one of the wire pulling grips. Fig. 7 is an edge view of the construction shown in Fig. 6. Fig. 8 is a side elevation of a portion of a uniformly bent wire as produced by the machine. Fig. 9 is a perspective view of a portion of a flat wire with uniform bends and which is employed in certain classes of work.

In the drawings, 1 is a rectangularly shaped frame, preferably made of metal, and is arranged to suit this particular kind of a

machine. This frame carries the mechanism for bending or crimping the wire. The machine is provided with a main shaft 2 which is mounted in suitable bearings 3 secured to the top of the frame. The shaft 2 stands transversely of the machine frame, as shown, and carries the pulley 5, and by means of a belt 6, the said pulley is connected with a suitable power generator, which in this instance is the motor 9.

Lying directly in the rear and standing parallel with the main shaft 2, is a secondary shaft 10 which is mounted in the journals 13 secured to the frame 1. The shaft 10 carries a pinion 15 which meshes with a pinion 16 on the main shaft 2, and by which means the former is rotated. The shaft 10 is also provided with a sprocket wheel 18, the latter leading to and engaging with a corresponding sprocket wheel (not shown) which is mounted on the extreme outer end of the frame 20. The frame 20 extends some distance away from the frame 1, and forms the supporting means for a track 21 which forms a guide way for the sprocket chain 19.

The track 21 consists of two channeled ways which lie in the same horizontal plane and stand parallel with each other. The channels in the track are engaged by the friction rollers 22 carried by the sprocket chain 19. The sprocket chain 19 is provided at intervals with wire gripping devices for catching and holding the wire, so that with the movement of said chain the wire is pulled through the crimping disks and crimped.

The wire gripping devices are formed of the body portions 25 which are recessed to form the shoulders 26. The inner faces of the shoulders are serrated and form a part of the jaws for holding the wire. The body portions 25 are pivotally secured to the links of the chain 19, and also support the friction rollers 22, which engage the channeled track 21, as heretofore described. The chain 19 is thus forced to travel a certain predetermined plane line during the act of pulling the wire through the crimping disks. The wire gripping devices are also provided with the pivotally mounted serrated faced pawls 27. The serrated faces of the pawls are normally held into contact with the serrated edges of the shoulders 26 by means of the tension springs 29.

The machine is provided with trip devices for actuating the wire gripping devices, and consists of a fixed bar 28 which lies to one

side and parallel with the track 21. This bar is provided with two trip blocks 30 which are arranged so as to stand in the path of travel of the outer ends of the pawls 27, so that when the two contact, the pawls 27 will be momentarily forced open. As soon as the ends of the pawls pass beyond the trip blocks they are closed by the action of the tension springs 29, heretofore mentioned. During the period of time that the pawls momentarily stand in open position, the wire is either caught and gripped or is released. Since the trip blocks 30 cause the operation of the pawls 27, thus determining the grasping or releasing of the wire, it will be seen that changing the relative position of the blocks will cause a variation of time between the operation of the pawls 27. This construction enables the machine to pull and cut wire of various lengths, which lengths can be previously determined. The trip blocks 30 are therefore adjustably mounted on the bar 28 by means of the set screws 33.

The machine is provided with a plate 35 upon which the crimping disks are mounted, and said plate also forms a means for securing a hollow guide cylinder 36 which is pivotally connected therewith, and through which the crimped wire passes after leaving the crimping disks. The discharge end of the cylinder 36 is so positioned as to always feed the wire to a certain point which lies directly in the path traveled by the wire gripping devices, while the first one of the trip blocks 30 is so placed upon the bar 28, with relation to the discharge end of the cylinder 36, as to cause the jaw 27 to open and grip the wire as the device reaches a horizontal plane after passing over the sprocket wheel 18. As the sprocket chain 19 has a continuous movement the wire will be carried forward therewith, which causes the wire to be drawn through the crimping disks. The wire is thus carried forward with the sprocket chain 19 until the pawl 27 comes into contact with the second trip block 30, which is mounted more remotely from the machine on the bar 28. This second block causes the pawl to open and permits the end of the crimped wire to drop into an assumed position, as shown by means of dotted lines in Fig. 2 of the drawings. The wire when released will fall into a knife edged groove 39 and over a rapidly rotating cutter disk 40, which is provided with a cutting blade 41 which severs the wire.

The guide cylinder 36 is provided with a weak spring 45 which will raise the stub end of the wire to a horizontal plane, in order that said stub will occupy a correct position so as to be grasped by the succeeding wire gripping device.

It might here be mentioned that the frame 20 can be extended a considerable distance from the machine frame 1 in order that the

chain may be of some length, which will provide the means for placing a series of the wire gripping devices thereon in order that the capacity of the machine will be increased.

The wire cutting disk 40 is mounted upon a suitable shaft 50, and by means of a belt 51 which leads to and engages a pulley 52 on the main shaft 2, the shaft 50 and the disk 40 are rotated.

The machine, as heretofore mentioned, is provided with a plate 35 upon which the crimping disks 55 and 56 are mounted. The upper disk 55 is mounted on a fixed stud shaft 57, and by means of the set-screw 58 the disk may be removed and another with larger teeth substituted. The lower disk 56 is mounted in a sliding box 60, and by means of the screws 61 the relationship of said disks can be changed. The adjustability of these disks is essential in order that crimps of different depths can be produced, while the removability of the disks makes it possible to change them so that crimps of different lengths can be produced.

Attention is called to the fact that the drawings show the plate 35 and the crimping disks as occupying a vertical position so that the crimps in the wire will be formed in a like direction. In crimping round wire the flat or straight sides of the wire, after it is crimped, are thus presented to the wire gripping devices, thereby insuring said devices holding the wire where caught and thus preventing any slippage which would cause wire of irregular lengths to be discharged from the machine. Fig. 9 of the drawings, shows a flat crimped wire, which is desirable for certain classes of work and which is demanded by a part of the trade. If this wire were run through the crimping disks in the same manner as the round wire, it would be evident that the wire gripping devices would grasp the narrow edge which might cause the wire to twist and slip. To facilitate the handling of the flat wire, I have provided means to shift the plate 35 and the crimping disks from a vertical to a horizontal position, so that when crimping the flat wire, the broad sides thereof, even though the crimps stand transversely, are presented to the wire gripping devices, thus giving a large contact area between the two. I accomplish the shifting of the plate 35 by providing it with the laterally extended shafts 75 which engage the slots 77 in the end of the frame 1 and in the standard 76, and by loosening the jam-nuts 79 the plate may be moved so as to occupy a horizontal position. In changing the position of the crimping disks, it will be noted that the point where the peripheries of the disks meet, or in other words where the wire enters between the peripheries of the disks, will be moved away from the inlet aperture 90 which is located in the frame 1. In order to bring this point between the disks back to

proper position so that the wire can be properly fed into the machine and be discharged into the guide cylinder 36, I form the slots 77 in a diagonal direction so that the lower terminal of said slots will lie directly below the inlet aperture 90. When the jam-nuts 79 are then loosened the plate 35 will slide into the lower ends of the slots, and by turning said plate into a horizontal position the center line between the disks will again be brought to register with the inlet aperture 90. When the parts occupy this position the flat wire, heretofore mentioned, can readily be crimped.

15 Having thus fully described my said invention, what I claim as new and wish to secure by Letters Patent of the United States, is—

1. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for shifting the disks from a vertical to a horizontal position, means for holding the disks in a given position, and a wire grasping means for grasping and pulling the wire through the crimping disks.

2. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for shifting the disks from a vertical to a horizontal position, means for holding the disks in a given position, and a wire grasping means for automatically grasping and pulling the wire through the crimping disks.

3. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, wire pulling means arranged within the machine to grasp and pull the wire through the crimping disks, and a guide means comprising a hollow tube to guide and direct the wire from the crimping disks to the pulling means.

4. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for changing the relationship of the disks, means for shifting the disks from a vertical to a horizontal position, and means for grasping and pulling the wire through the crimping disks.

5. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for changing the relationship of the disks, means for shifting the disks from a vertical to a horizontal position, means for grasping and pulling the wire through the crimping disks, and a cutter means for severing the wire.

6. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for changing the relationship of the disks, means for shifting the disks from a vertical to a horizontal position, means for automatically grasping and pulling the wire through the crimping disks, and a cutter means for severing the wire.

65 7. A wire crimping machine comprising

the frame, a pair of crimping disks mounted therein, means for changing the relationship of the disks, means for shifting the disks from a vertical to a horizontal position, means for grasping and pulling the wire through the crimping disks, and a guide means for guiding and directing the wire from the crimping disks to the grasping and pulling means.

8. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means comprising a hollow tube for grasping and pulling the wire through the crimping disks, guide means to guide and direct the wire from the disks to the pulling means, and trip means adapted to engage and actuate said grasping and pulling means at predetermined points.

9. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for changing the relationship of said disks, means for shifting the disks from a vertical to a horizontal position, means for grasping and pulling the wire through the crimping disks, and a trip means adapted to engage and actuate the grasping and pulling means at predetermined points.

10. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for changing the relationship of said disks, means for shifting the disks from a vertical to a horizontal position, means for grasping and pulling the wire through the crimping disks, trip means adapted to engage and actuate the grasping and pulling means at predetermined points, and means for adjusting the trip means.

11. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for changing the relationship of the disks, means for shifting the disks from a vertical to a horizontal position, means for grasping and pulling the wire through the crimping disks, a trip means adapted to engage and actuate the grasping and pulling means at predetermined points, and a cutter means for automatically cutting the wire.

12. A wire crimping machine comprising the frame, a pair of crimping disks mounted therein, means for changing the relationship of the disks, means for shifting the disks from a vertical to a horizontal position, means for grasping and pulling the wire through the crimping disks, a trip means adapted to engage and actuate the grasping and pulling means at predetermined points, means for adjusting the trip means, and a cutter means for automatically cutting the wire.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this 11th day of December, A. D. one thousand nine hundred and six.

JESSE L. ALLEY. [L. s.]

Witnesses:

F. W. WOERNER,
L. B. WOERNER.