(No Model.) 5 Sheets—Sheet 1.

F. C. WILSON & Z. H. BOOLS.

MACHINE FOR WIRING SHEET METAL.

No. 277,180. Patented May 8, 1883.

Fig. 1.

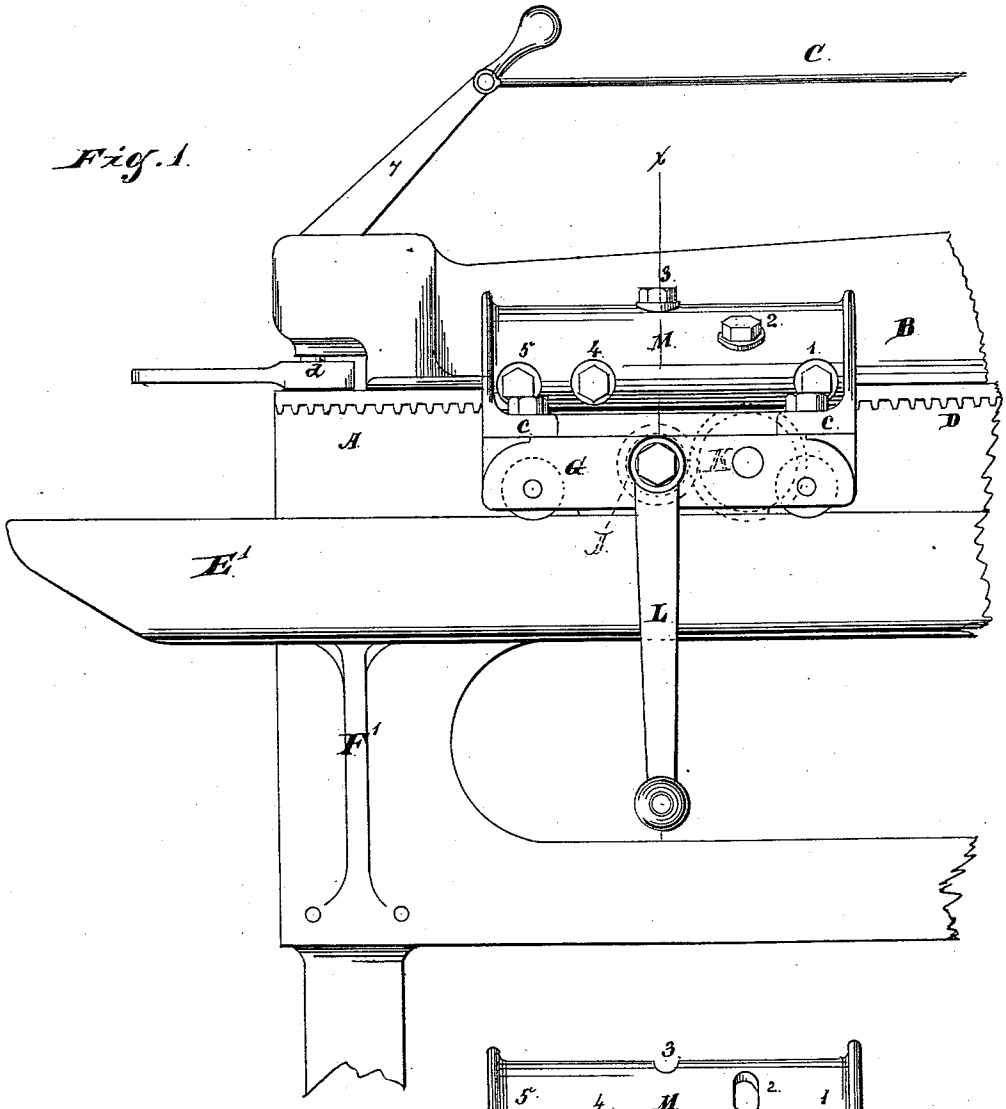
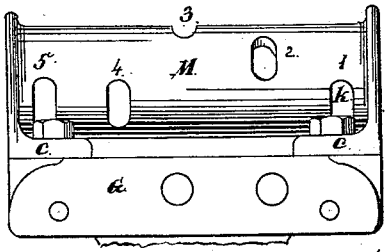


Fig. 2.



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Fig. 4.

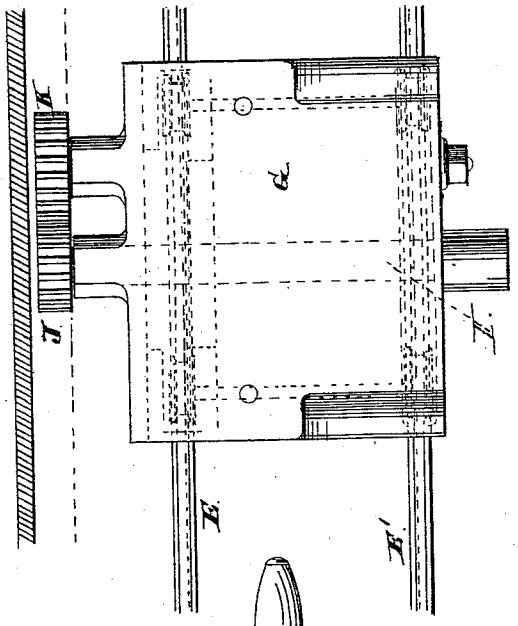
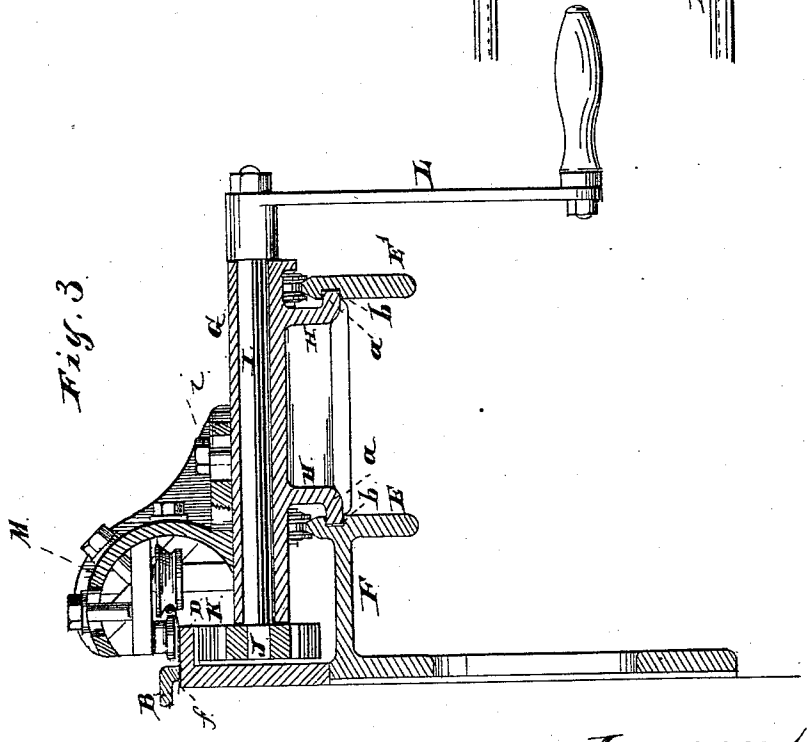


Fig. 3.



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Fig. 5.

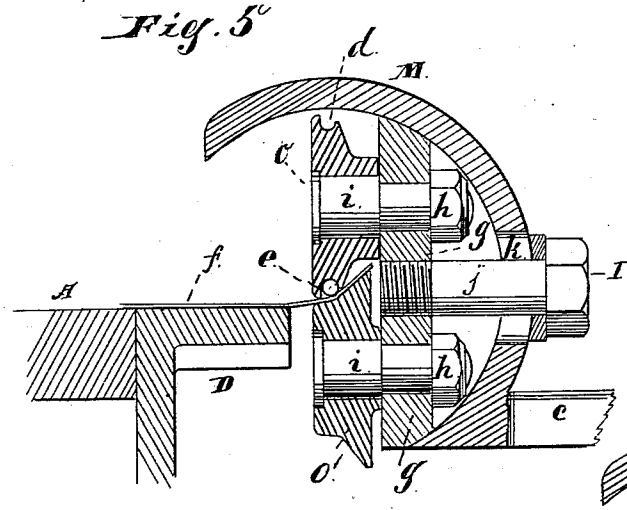


Fig. 6.

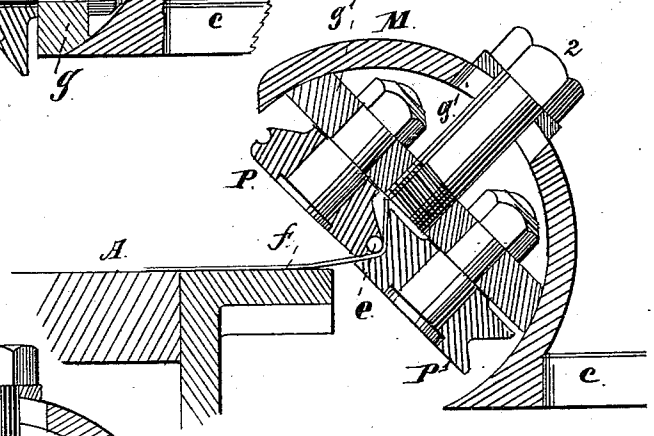
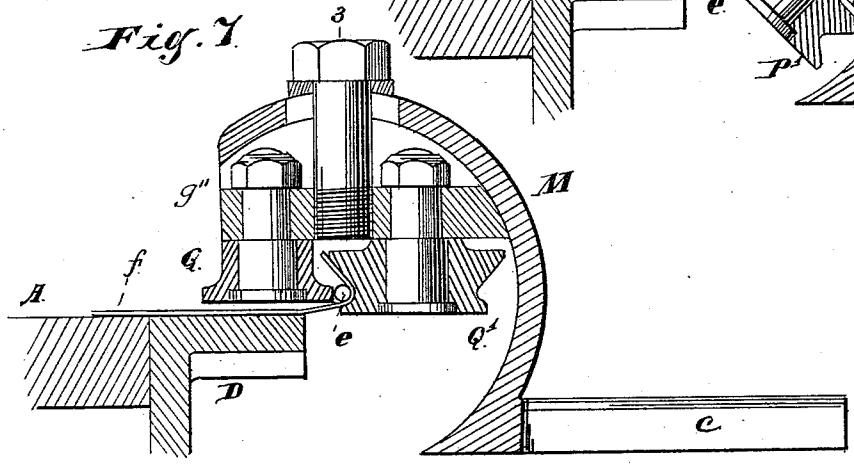


Fig. 7.



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(No Model.) 5 Sheets—Sheet 4.

F. C. WILSON & Z. H. BOOLS.

MACHINE FOR WIRING SHEET METAL.

No. 277,180. Patented May 8, 1883.

Fig. 8

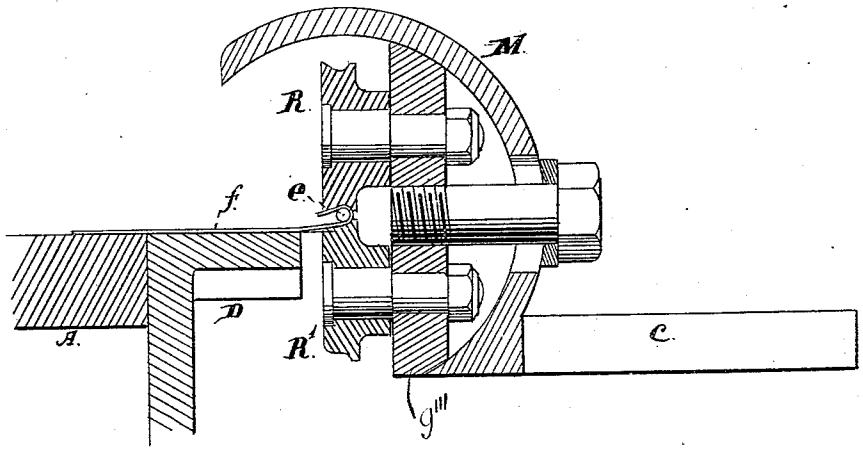
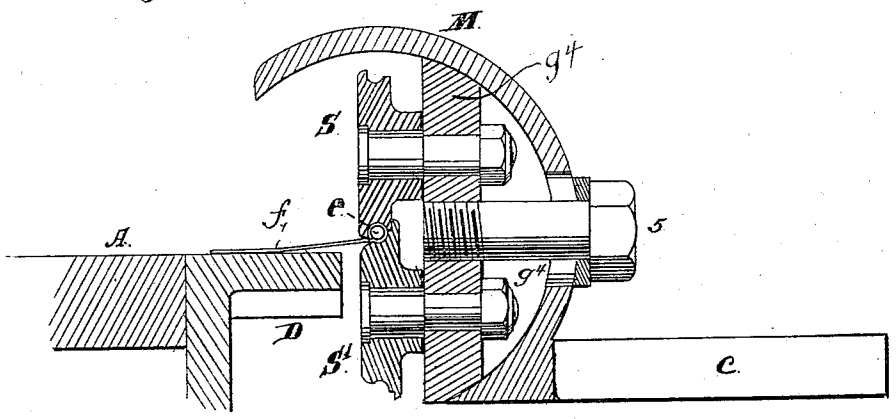


Fig. 9.



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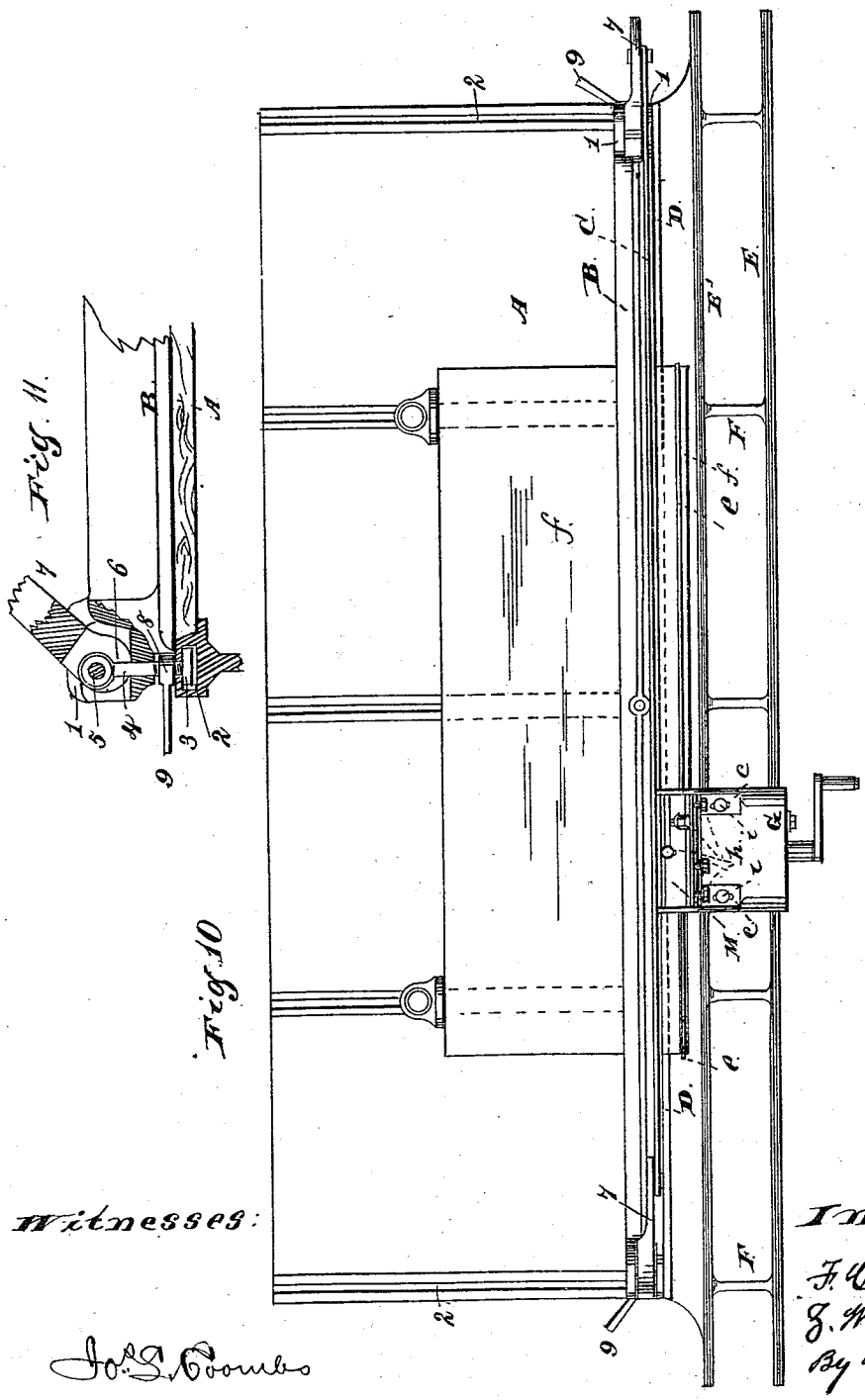


Fig. 11.

Fig. 10.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR WIRING SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 277,180, dated May 8, 1883.

Application filed January 8, 1883. (No model.)

To all whom it may concern:

Be it known that we, F. CORTEZ WILSON and ZADOCK H. BOOLS, residing at Chicago, in the county of Cook and State of Illinois, and citizens of the United States, have invented new and useful Improvements in Machines for Wiring Sheet Metal, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation. Fig. 2 is a detail, being a front elevation of the part shown. Fig. 3 is a vertical cross-section at line *x* of Fig. 1, so far as the parts shown at Fig. 1 are represented in Fig. 3. Fig. 4 is a plan of the parts shown, the frame or case which carries the rollers being removed. Fig. 5 is a vertical section taken through the first pair of rollers; Fig. 6, a section through the second pair of rollers; Fig. 7, a section through the third pair of rollers; Fig. 8, a section through the fourth pair of rollers; Fig. 9, a section through the fifth pair of rollers. Figs. 5 to 9, inclusive, are enlarged, and are two thirds of full size. Fig. 10 is a plan view, and Fig. 11 a detail showing the clamping-bar, and means for raising and lowering the same and retaining it laterally on the table.

The object of this invention is to construct a machine by the use of which the edge of a piece of sheet metal can be rapidly and effectually turned over a piece of wire. This is an essential operation in manufacturing many articles. We accomplish the desired result by means of a series of rollers arranged in pairs and supported in a case or frame, which can be made to travel back and forth upon a track in front of a table, upon which the sheet metal to be operated upon is to be clamped. The rollers are formed and arranged substantially as shown and described.

In the drawings, A represents a table.

B is a clamping-bar for holding the sheet metal firmly on the table. This bar is adapted to be raised and lowered, and also to be adjusted laterally on the table, which can be effected by suitable devices. As here shown, we accomplish these movements by providing each end of the bar with a chamber having lateral flanges 1 at its top. The table is provided with transverse T-shaped slots 2, in each of which is fitted the T-shaped head 3 of a screw-threaded rod, 4, having a transverse pin, 5, at its upper end, to which is pivoted the cam 6, having a handle, 7. On the screw-threaded part of the rod 4 is fitted a nut, 8, having a handle, 9. By raising the handles 7 the cams lift the bar by acting on the flanges 1, and by depressing the said handles the bar will be pressed down upon the table. By loosening the nuts 8 through the medium of their handles 9 the bar can be laterally adjusted and held in position by tightening the nuts down upon the table. The handles 7 of the cams are connected by a rod, C, so that both are moved simultaneously. These special adjusting devices are not here claimed, as they form the subject-matter of a separate application filed of even date herewith.

D is a rack under and secured to the front edge of the table. As shown, it is cast with a part of the table. In front of the table there is a double track, E E′, supported in any suitable manner. As shown, E is supported by an arm, F, and E′ by brackets F′, connected with the frame of the table.

G is a platform, the under side of which is provided with four grooved wheels, which rest upon the tracks E E′.

H are flanges extending downward from the under side of the platform G, which flanges are provided with lateral projections *a*, which enter grooves *b* upon the inside of the tracks E E′.

I is a shaft supported, as shown, in a long bearing in the platform G. Upon the inner end of such shaft is a cog-wheel, J, which engages with another cog-wheel, K, which is supported upon another shaft located in suitable bearings in or upon the platform G. The cog-wheel K engages with the rack D.

L is a crank upon the outer end of the shaft I.

M is a frame or case, in which the operating rollers are secured, which is open upon one side, and is provided with flanges *c*. This frame M is secured to the platform G by means of bolts *i*, which pass through the flanges *c*.

There are five pairs of rollers, as shown, which perform the work of turning the sheet metal over the wire, which are supported in the frame M, so that they can be adjusted in

different positions, which may be accomplished by securing each pair of rollers to a separate block and securing the block upon the inside of the frame M, which, as shown, is circular.

In Fig. 5 I have shown the first pair of rollers, which are located near the right-hand end of the frame M, looking at Fig. 1. The upper one of these rollers, O, is provided with a circular groove, *d*, in its face to receive the wire *e*, over which the edge of the sheet of metal *f* is to be turned. The lower roller, O′, is formed substantially as shown, and so that it will bend the edge of the sheet metal upward a little. These two rollers are pivoted in a block, *g*, the back side of which fits the inside of the frame M, the back side of the block being slotted longitudinally to receive the nuts *h*, which hold in place the journals *i*, upon which the rollers rotate, the journals having a head or shoulder at the outer end, and also a shoulder, which comes in contact with the outer face of the block *g*, which block *g* is held in place in the frame M by means of a screw-bolt, *j*, which passes through a slot, *k*, in the frame M.

P P′ are the second pair of operating-rollers. They are secured to another block, *g′*, which is substantially like the block *g*, and they rotate upon journals, the same as rollers O O′, and the block *g′* is secured in the frame M in the same manner as is *g*, but in a different position. The roller P is provided with a groove in its face adapted to receive the wire. The roller P′ is formed as shown, and has in its face a groove, which will be understood from the drawings. (See Fig. 6.)

Q Q′ represent the third pair of rollers, which rotate upon journals secured to another block, *g″*, similar to *g*, which is secured upon the inside of the frame M, as before described, but in a different position. (See Fig. 7.)

In Fig. 8 I have shown the fourth pair of rollers, R R′, and in Fig. 9 the fifth pair, S S′. The rollers R R′ rotate upon journals secured to a separate block, *g‴*, which block is secured in the frame, as before described, and S S′ also rotate upon journals secured to another similar block, g^4, also secured to the frame M, as before described.

The form of each roller will be better understood from an inspection of the drawings than from a written description. So, too, the positions of the rollers will be understood from the drawings. In Figs. 1 and 2 of the drawings the figures 1 2 3 4 5 indicate the places where the several pairs of rollers are located in the frame M.

The position of each pair of rollers can be somewhat changed by loosening the screw-bolt, which holds the block in place which carries one pair of rollers, and changing the position of the block in the frame M, which change is permitted by the slot through which said screw-bolt passes.

The last pair of rollers, S S′, are finishing-rollers, and complete the turning of the sheet over the wire. The grooves in the edges of these two rollers must be adapted to the size of the wire used, and hence it is necessary to change these rollers for different sizes of wire; but all the other rollers can be used with wire of several different sizes.

It of course takes more metal to cover a large wire than a small one, and hence the position of the edge of the sheet of metal, or the position of the rollers relative thereto, must be changed, as required, by the use of wire of different sizes. We find it more convenient to always adjust the edge of the sheet upon a given line than to change its position for the purpose mentioned, and have therefore secured the frame M upon the platform G, so that such frame can be adjusted laterally. This we do by providing slots in the flanges *c*, through which the bolts *i* pass. This is a desirable feature, and in use saves considerable labor in handling the sheets.

The operation is as follows: The sheet of metal which is to be wired is to be clamped upon the table with its front edge projecting beyond the table a suitable distance to allow the rollers to act upon the same, the frame M, with the rollers therein, having first been carried to the left-hand end of the machine. A piece of wire is then to be laid upon the sheet metal, a little distance from the front edge thereof, and it is better to have the end of the wire project a little beyond the end of the sheet which is to be operated upon. Then by rotating the crank L the frame M, with the rollers therein, will be made to traval upon the track E E′ toward the other end of the table, and by holding the wire in the proper position it will pass in between the pair of rollers O O′, or, more accurately speaking, the rollers will pass along, one over and one under the wire, and as soon as these rollers reach the sheet of metal the periphery of the lower roller will act upon the under side of the sheet and bend it upward a little, as shown in Fig. 5. When the next pair of rollers reaches the sheet the wire will be held between them, and the lower roller, P′, will bend the edge of the sheet still more, as shown in Fig. 6. When the third pair of rollers, Q Q′, reaches the sheet, the wire will be held between them, and the roller Q′ will bend the edge of the sheet over the wire, as shown in Fig. 7. When the next pair of rollers, R R′, reaches the sheet, the upper roller, R, will act upon the sheet and bend it over the wire still farther, as shown in Fig. 8. When the next pair of rollers, S S′, reaches the sheet, they will finish the operation, bringing the edge of the sheet over the wire into the position shown in Fig. 9. During the entire operation, after the wire passes in between the first pair of rollers, it will be held in place by the rollers, and the edge of the sheet will be gradually turned over the wire, as stated, and when the rollers leave the sheet its edge will have been turned over the wire the whole length of the sheet perfectly, and as shown in Fig. 9.

The wire shown in the drawings, Figs. 5 to

9, is supposed to be three-sixteenths of an inch in diameter. The two rollers of each pair should be a little nearer together if smaller wire were used, and a little farther apart for larger wire.

What we claim as new, and desire to secure by Letters Patent, is as follows:

1. A machine for wiring the edges of sheet metal, composed, essentially, of a case or frame and a series of pairs of rollers constructed to receive and hold the sheet of metal and the wire laid thereon, and to gradually bend the metal around and in contact with the wire to permanently confine the latter within the folded edge of the metal, substantially as described.

2. A series of rollers formed and arranged substantially as set forth, and suitably supported, in combination with a table, to hold the sheet metal, and a track, F, in front of the table, over which the frame or support which carries the rollers can be made to travel, substantially as and for the purpose specified.

3. In a machine for wiring sheet metal, in combination with a traveling platform, a case carrying a series of rollers, and detachably connected with such platform, whereby the case can be adjusted laterally upon the platform, substantially as and for the purpose specified.

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