April 1, 1924. 1,488,996

G. J. McDONNELL

MACHINE FOR MAKING CLOTHES HANGERS

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Fig. 1.

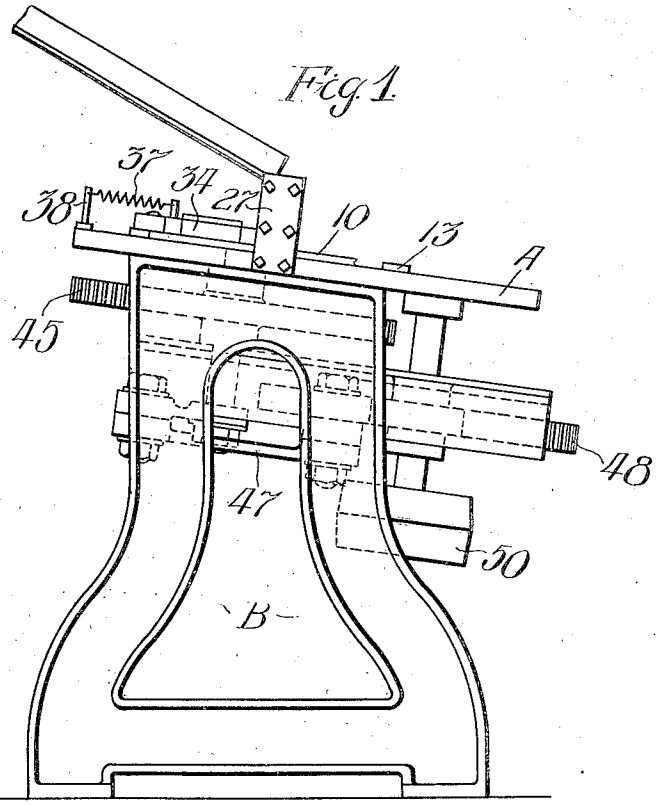


Fig. 2.

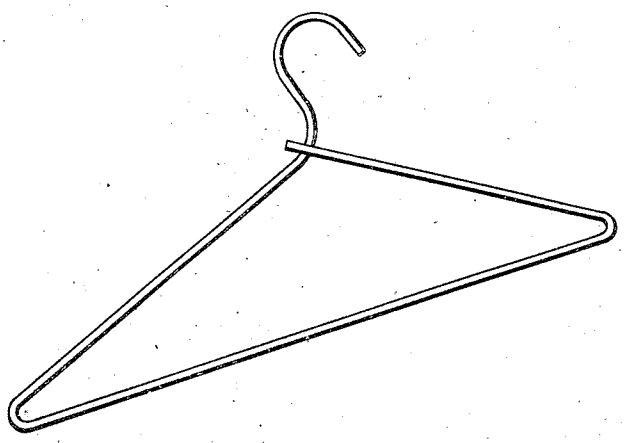
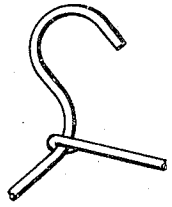


Fig. 3.



Witness
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Inventor:
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MACHINE FOR MAKING CLOTHES HANGERS

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Fig. 4.

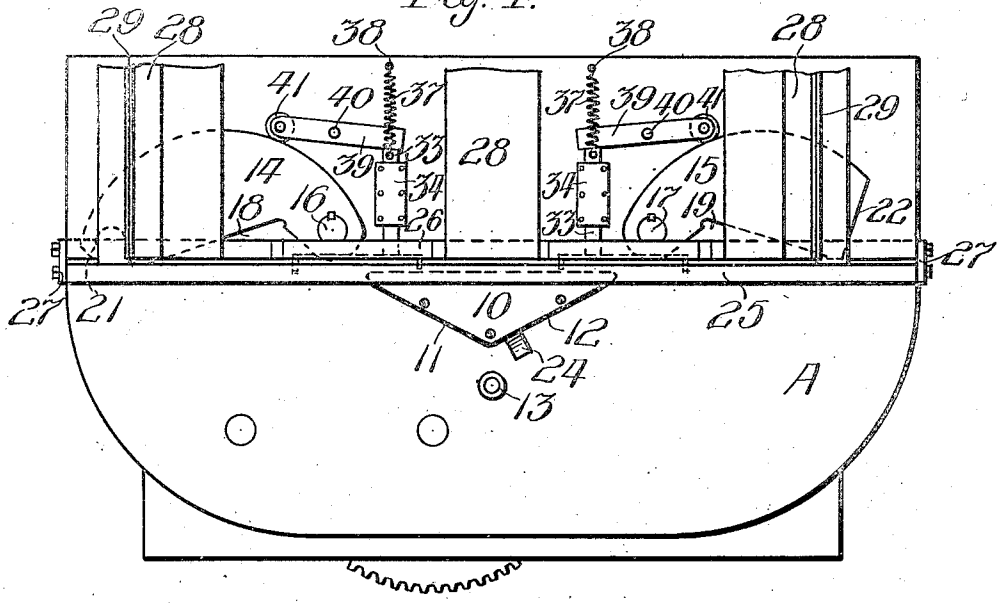

Fig. 5.

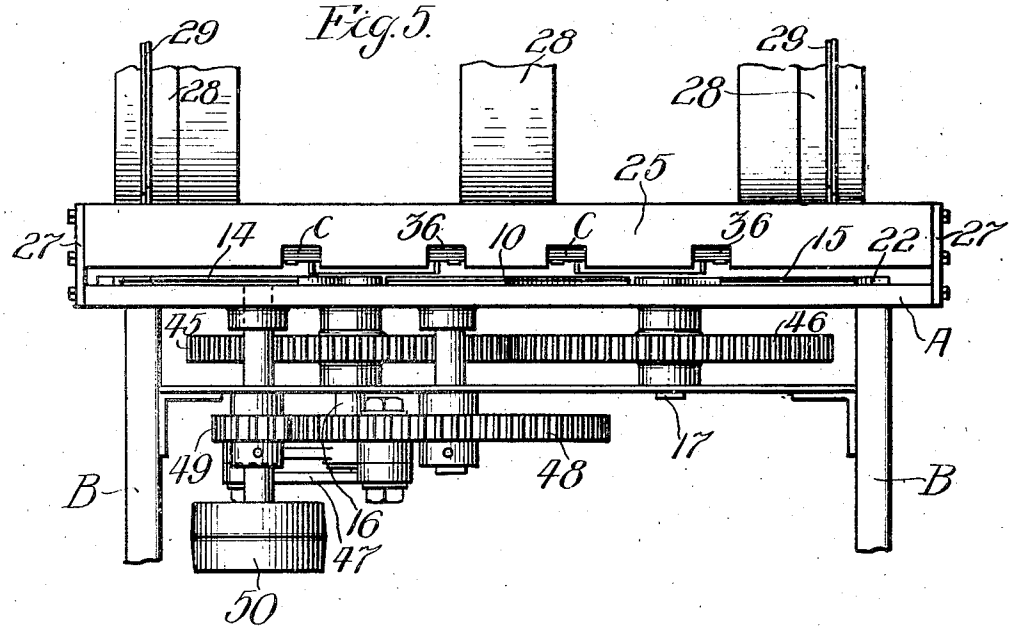

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Fig. 6.

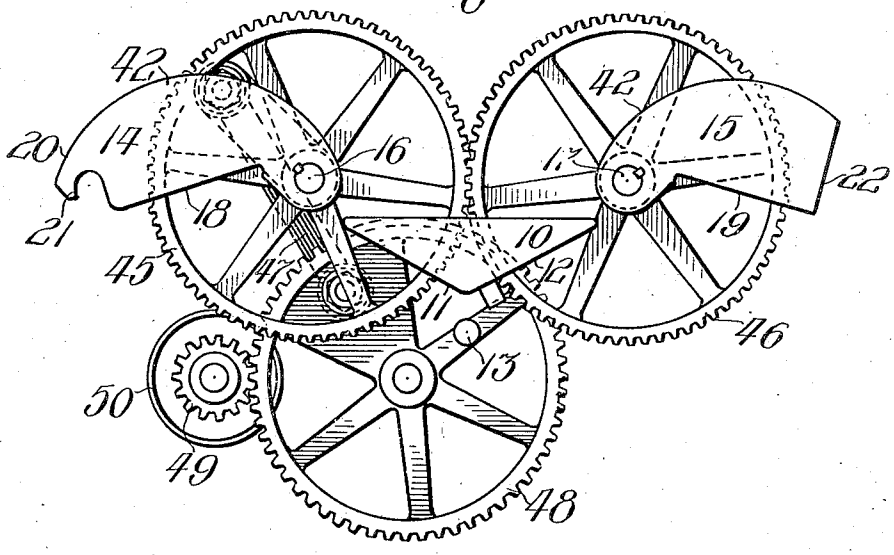
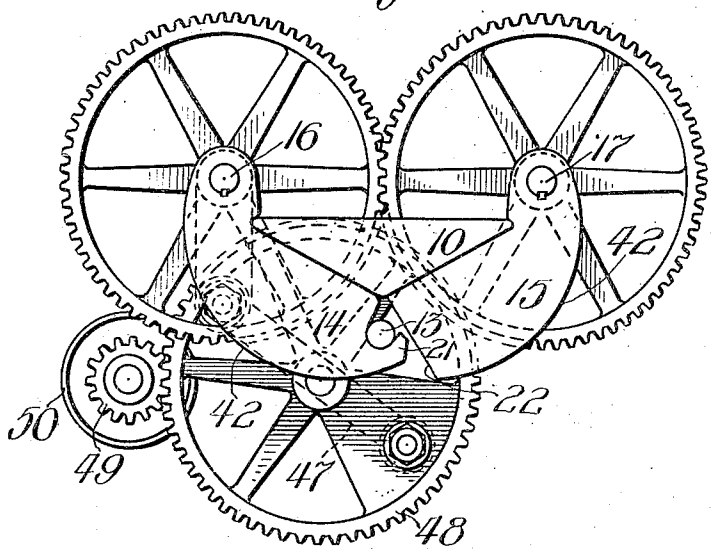


Fig. 7.



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MACHINE FOR MAKING CLOTHES HANGERS

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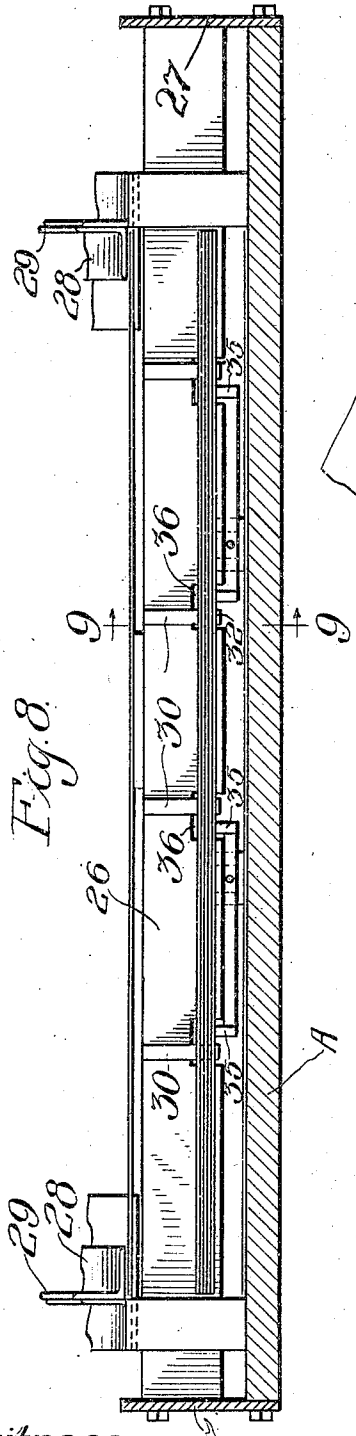

Fig. 8.

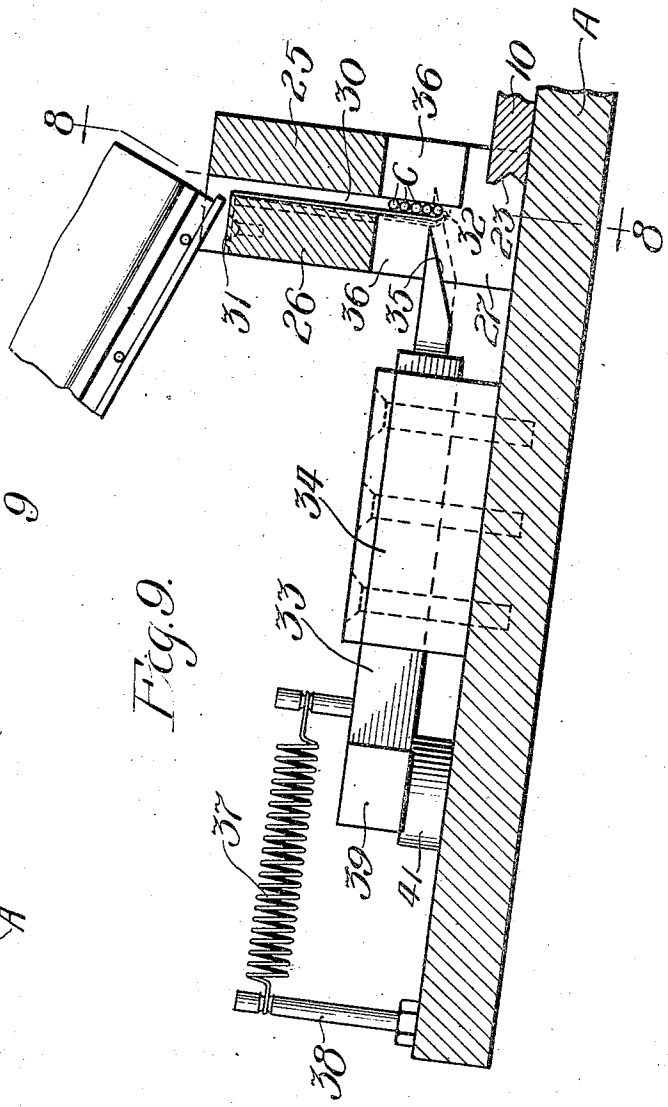

Fig. 9.

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Patented Apr. 1, 1924. 1,488,996

UNITED STATES PATENT OFFICE.

GEORGE J. McDONNELL, OF CHICAGO, ILLINOIS.

MACHINE FOR MAKING CLOTHES HANGERS.

Application filed November 20, 1922. Serial No. 602,057.

To all whom it may concern:

Be it known that I, GEORGE J. McDONNELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Machine for Making Clothes Hangers, of which the following is a specification.

This invention relates to a machine which performs the bending operation in the making of a wire clothes hanger. In particular it relates to certain improvements in the means for delivering individual wires in position to be operated upon by the forming dies; to the construction of the dies themselves and other parts associated therewith; to the mechanism by which the dies are operated to produce the desired bends in the material which is worked upon; and, in general, to the various features of construction and combinations of parts which are more fully set forth hereinafter in the specification and claims.

In the accompanying drawings is illustrated one exemplification of this invention in the manner following:

Figure 1 is a side elevation of the machine;

Fig. 2 is a perspective view of the hanger product derived from the machine;

Fig. 3 is a fragmentary view showing the final form of the hanger;

Fig. 4 is a plan view looking directly toward the bed plate of the machine;

Fig. 5 is a front elevation of the machine;

Figs. 6 and 7 represent the several forming dies together with the operating mechanism therefor, initial and final positions being shown, respectively, in the two figures;

Fig. 8 is a longitudinal section through the bed plate taken on line 8—8 of Fig. 9; and

Fig. 9 is a transverse section therethrough taken approximately on line 9—9 of Fig. 8.

The present machine comprises a bed plate A having, by preference, a slight downward inclination, as shown, the bed plate being suitably supported as by a framework or legs B. Mounted upon the bed plate is a stationary die 10 which is in the general form of an isosceles triangle so arranged as to present its base side toward the rear of the machine, its two shorter sides 11 and 12 being faced forwardly in consequence. Also there is mounted upon the bed plate forwardly of this triangular die and relatively close to its apex, a second stationary die 13, which is circular in formation. Operatively associated with these two dies are a pair of movable forming dies 14 and 15, each mounted fast upon the upper end of shafts 16 and 17 respectively, which lie to the rear of the triangular die in a line which is parallel to the base side thereof. The form of these two movable dies is such as to provide on each faces 18 and 19 adapted to bear squarely against the sides 11 and 12, respectively, of the triangular die when the movable dies have been swung to their extreme positions (see Fig. 7). In addition, the die 14 is formed with a neck 20 connecting with a head 21 adapted to partly surround the circular die 13, as indicated in Fig. 7. On the other movable die 15 is an end face 22 extending away from its working face 19 at such an angle as to clear the head 21 of the companion die when the parts have reached the maximum position shown in the drawings.

Each of the faces of the triangular die is preferably grooved as at 23 (see Fig. 9) and likewise the working faces of the movable dies may be similarly formed to better engage the wire which is being worked upon. A wire of proper length, if placed adjacent the rear face of the triangular die, will accordingly be acted upon by the movable dies to produce a generally triangular structure conforming to the shape of the die 10 with one wire end extended outwardly and thence curved in hook formation, as required by the contour of the head 21 in co-operation with the circular die 13, so as to produce the article shown in Fig. 2. A small inclined block 24 is shown in proximity to one side of the triangular die for the purpose of holding one part of the hanger thus produced at a slight elevation above the bed plate, thus facilitating its removal therefrom with the fingers. The free end of the hanger thus formed may be thereafter twisted around in the manner shown in Fig. 3 to produce a clothes hanger of conventional design.

It is desirable that means be provided for delivering wires, one at a time, in position to be acted upon by dies of the kind described. With this end in view, I have arranged certain mechanism which lies in part to the rear of the triangular die, and in part thereover, as well as over the movable dies. This mechanism includes in its

assembly a magazine extending lengthwise of the bed plate and comprising by preference front and rear walls 25 and 26 respectively, spaced apart a distance about equal to the diameter of the wires which are used in making the clothes hanger product. These walls may be conveniently secured at their ends by connecting plates 27 which have a mounting also on the bed plate so as to support the magazine at an elevation thereabove sufficient to afford clearance for the movements of the dies. The magazine which is thus formed is adapted to accommodate a plurality of wires C each cut to the desired length, and stacked one upon the other, as best indicated in Fig. 9. Wires of this kind may be supplied to the machine from any appropriate cutter (not shown) being delivered thereto with the aid of suitably inclined guides 28, the outer ones of which are flanged at 29, as best shown in Figs. 4 and 5. In this manner, the wires are permitted to roll down the guides so as to drop into the magazine where they occupy the stacked relation described.

The lowermost wire in the magazine is maintained therein at an elevation somewhat higher than the movable dies with the aid of a plurality of spring arms 30 each having an upper end 31 formed to connect with the corresponding edge of the wall 26. At its lower end each spring arm is bent around in a forward direction, as at 32, to provide a support for the lowermost wire. Within the wall 26 are formed suitable recesses, one adjacent each spring arm permitting the latter to swing thereinto, as required, with each release of the lowermost wire contained in the magazine. The means for effecting this release includes a pair of bolts 33 each slidably mounted within a guide block 34 which is connected to the bed plate at a point rearwardly of the magazine. The forward end of each bolt may be beveled as at 35 to provide, in effect, duplex wedges the upper faces of which are disposed in a plane transverse to the magazine walls. Within these walls are formed registering openings 36 in the path of movement of the bolt wedges permitting the latter to occupy either of the positions shown by the full and dotted lines in Fig. 9. When moved to a forward position, the several wedges will displace from the magazine the lowermost wire, forcing the spring arms rearwardly for this purpose, each wedge at the same time being projected beneath the wire thereabove to afford support for all the wires in the magazine during the brief interval that the spring arms are retracted.

The two bolts which thus act to deliver the wires individually in position to be acted upon are operated in conjunction with the movable dies. The means for accomplishing this includes a spring 37 connected to each bolt and to a post 38 which is mounted on the bed plate rearwardly thereof in such a manner as to normally maintain each bolt in a retracted position. Also in engagement with the rear end of each bolt is one end of a rocker arm 39 pivoted to the bed plate as at 40 and equipped at its opposite end with a roller 41 which lies adjacent a cam face 42 formed on the movable dies. With the parts related as shown in Fig. 4, where the dies are ready to receive a new wire, the rocker arms are engaged by the cam faces to exert a forward pressure on each of the two bolts 33 with the consequence that a wire is thereby displaced from the magazine to drop into operative position upon the bed plate. With commencement of oscillation of the two movable dies, the rocker arms shift their position with the result that the bolts are then retracted, thus permitting the entire stack of wires to descend in the magazine a distance equal to the diameter of one wire. It will thus be noted that the mechanism described provides an automatic feed for the wires such as to deposit them individually in position for forming with each operation of the dies.

The mechanism for oscillating the dies may be of any approved kind. As illustrative of a construction which will answer the purpose of this invention, I have shown in Figs. 6 and 7 an arrangement of gears, two of which 45 and 46 are made fast to the shafts 16 and 17 respectively. A pitman 47 connects one of these gears with a third gear 48, which latter is in mesh with a pinion 49 having connection with a pulley 50 to which power is supplied as by means of a belt from any suitable source. With rotation of the gear 48, the other two gears are oscillated, the length and disposition of the pitman being such as to impart to the latter a range of movement of perhaps 135°. In this manner, the movable dies are assured of co-operation with the two stationary dies so as to perform upon the wire the bending operations theretofore described.

It will be apparent that the machine of my invention may be embodied in forms other than the one herein shown and described without sacrifice of the features of improvement herein set forth and claimed, and accordingly I desire that any such modifications shall be included within the scope of this patent in so far as they respond to this invention as defined in the claims following.

I claim:

1. In a machine of the kind described, the combination of two movable dies and two stationary dies of which one is triangular and the other circular, means for oscillating the movable dies in a manner to bend a wire around the triangular die with one wire end hooked around the circular die to pro-

duce a clothes hanger, means wherein a plurality of wires are contained, and means associated with the movable dies adapted with each operation thereof to release a single wire into position to be acted upon by the several dies, substantially as described.

2. In a machine of the kind described, the combination with a bed plate of a stationary die mounted thereupon, and a pair of movable dies arranged in proximity to the stationary die, there being cam surfaces formed on the movable dies, means for holding a quantity of wires in proximity to the several dies, and means for releasing a single wire into position to be acted upon, said releasing means having a connection with the cam surfaces of the two movable dies so as to be operated thereby, substantially as described.

3. In a machine of the kind described, the combination with a bed plate of a pair of movable dies adapted to oscillate thereupon, a stationary die arranged to co-operate with the movable dies and to lie adjacent the same when the latter are in one extreme position, means formed on the three dies adapted to grip a wire which is to be acted upon, means in proximity to the three dies for holding a quantity of wires, and a cam releasing device associated with the two movable dies adapted with each operation of the movable dies to discharge a single wire into operative position relative to the several dies, substantially as described.

4. In a machine of the kind described, the combination with a bed plate of two dies mounted fixedly thereon, one triangular, and the other circular, the latter being located in proximity to an apex of the former, a pair of movable dies each adapted to swing about an axis which is relatively proximate to the two remaining apexes of the triangular die, the movable dies being each formed with a cam surface, means engaging with the cam surfaces of the movable dies adapted for releasing a single wire into position to be acted upon by the several dies, and means for oscillating the movable dies whereby the latter are required to bend the wire around the triangular die with one end of the wire hooked around the circular die to produce a coat hanger of the character described.

5. In a machine of the kind described, the combination of two fixedly mounted dies, one circular and the other in the form of an isosceles triangle, the circular die being disposed relatively close to the apex formed by the two shorter sides of the other die, a pair of movable dies adapted to oscillate about axes which lie in a plane parallel to the base side of the triangular die and spaced therefrom a relatively short distance, each of the movable dies being provided with a face which is adapted to co-operate with the shorter sides of the triangular die to bend the wire completely therearound, one of the movable dies being further formed with a head adapted to partly surround the circular die and to bend one wire end therearound in the form of a hook, and the other die being so shaped as to clear the circular die when moved to a position adjacent the triangular die, and means for oscillating the two movable dies in unison from positions rearwardly of the base side of the triangular die, substantially as described.

6. In a machine of the kind described, the combination of a triangular die and a circular die each fixedly mounted with respect to the other, the circular die being located adjacent an apex of the triangular die, and a pair of oscillatable dies each adapted to co-operate with the two stationary dies to bend a wire in the form of a triangle around the one with one wire end in the form of a hook partly around the other to produce a clothes hanger of the character described, substantially as described.

G. J. McDONNELL.

Witness:
EPHRAIM BANNING.