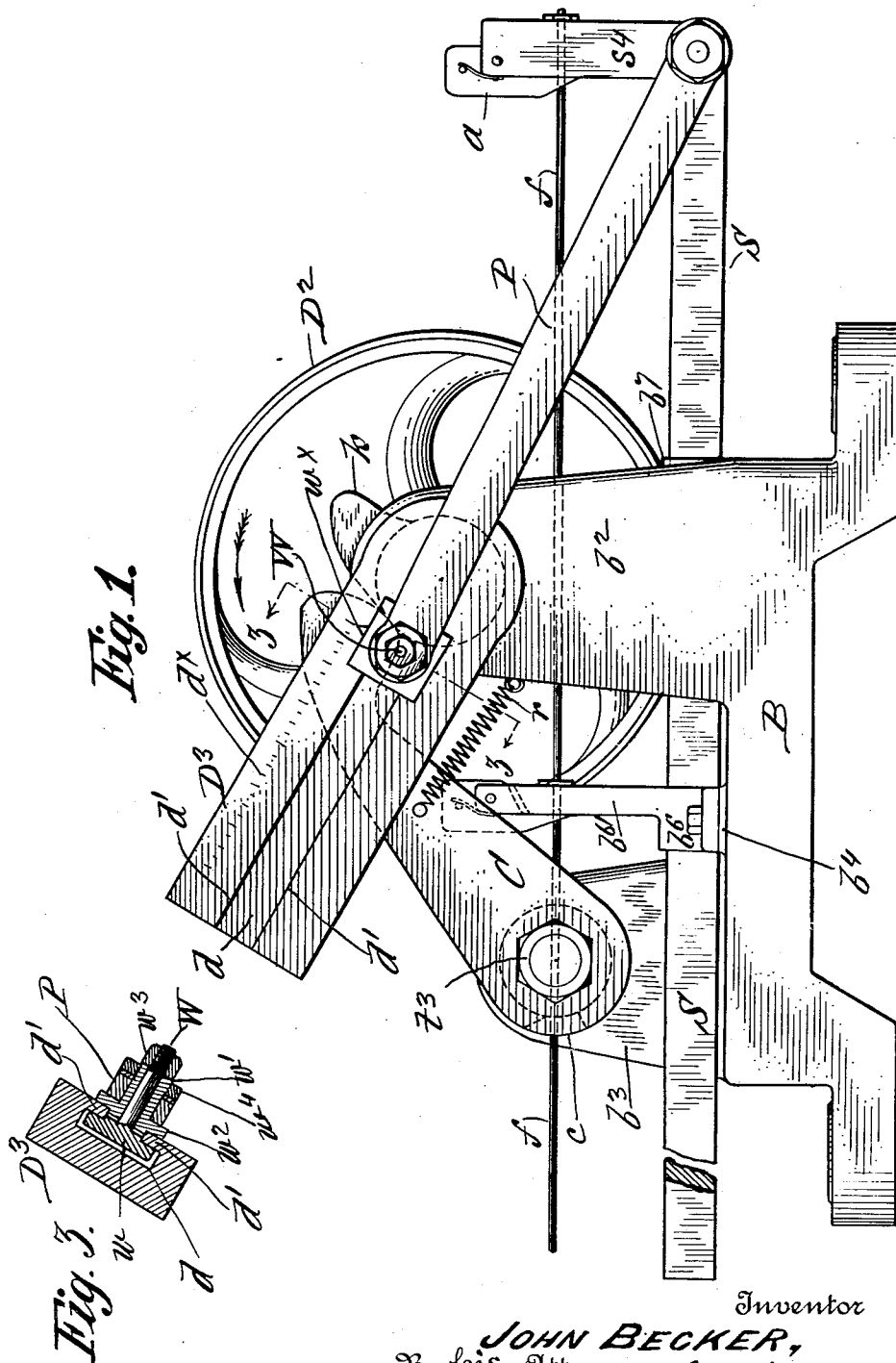


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 AUTOMATIC WIRE BLANK CUTTING APPARATUS.
 APPLICATION FILED JULY 31, 1919.

1,336,605.

Patented Apr. 13, 1920.

4 SHEETS—SHEET 1.



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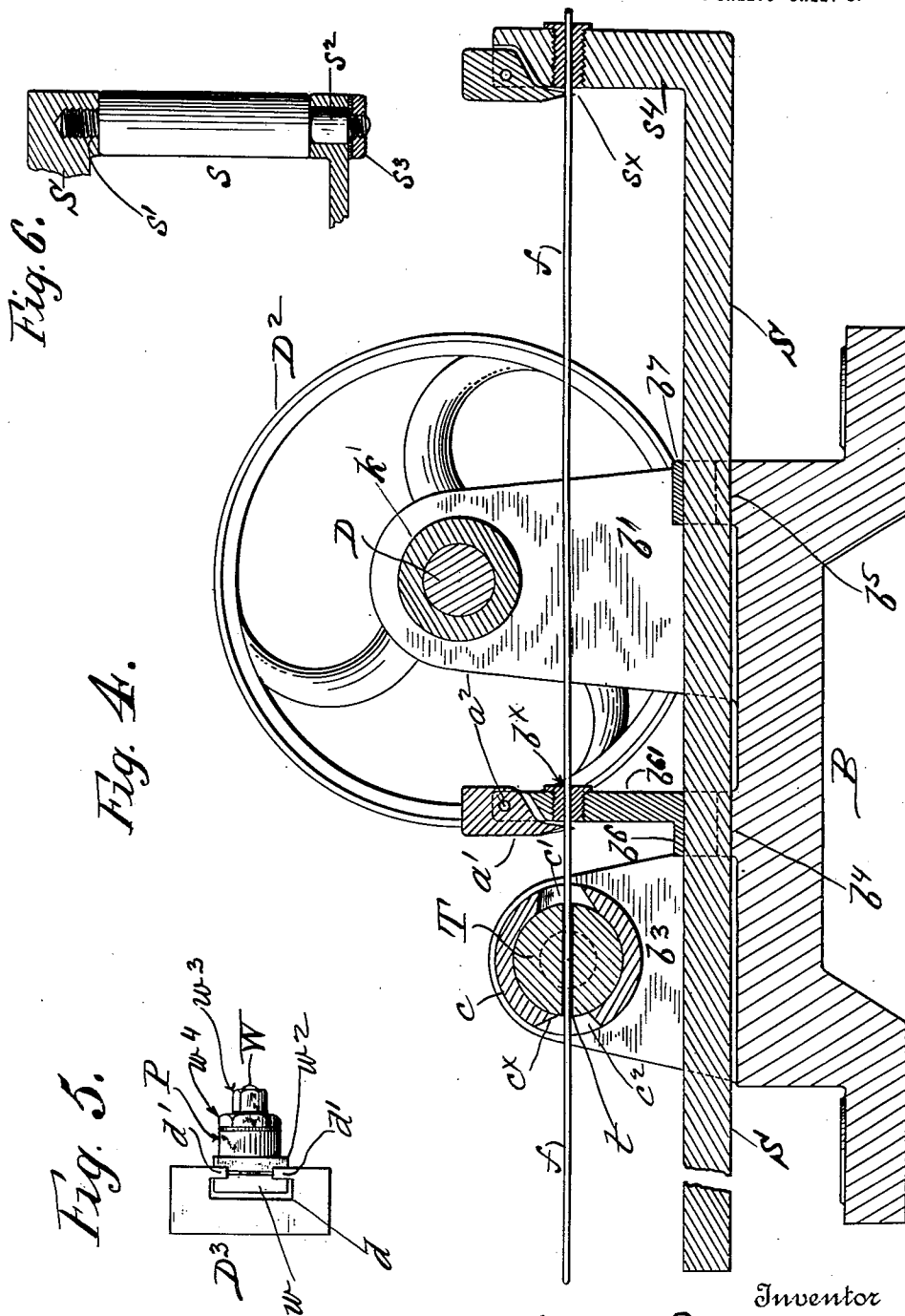
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Fig. 8.

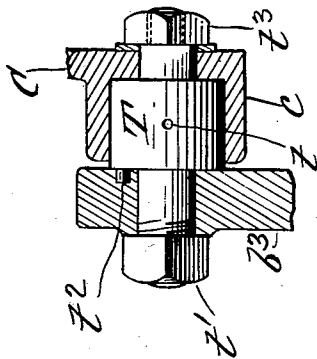


Fig. 10.

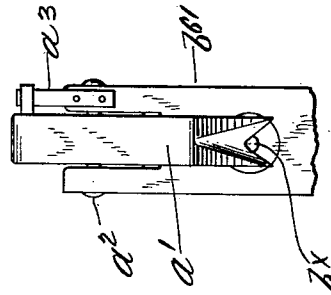


Fig. 7.

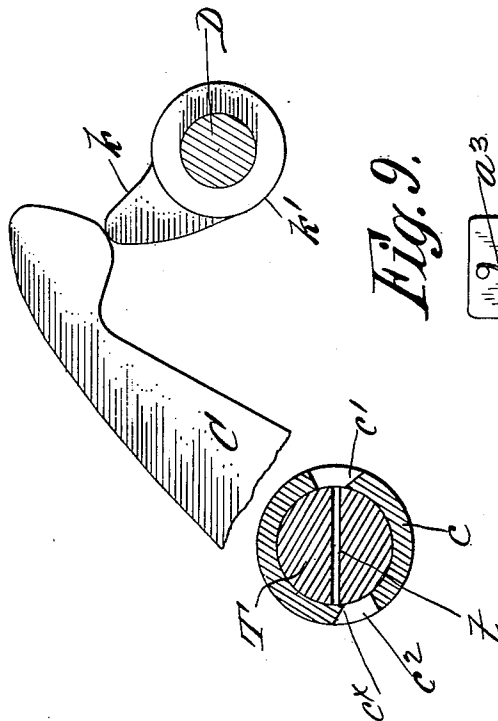
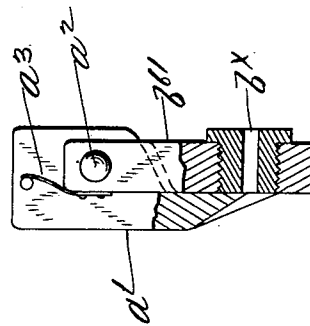


Fig. 9.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC WIRE-BLANK-CUTTING APPARATUS.

1,336,605.

Specification of Letters Patent.

Patented Apr. 13, 1920.

Application filed November 10, 1917. Serial No. 201,268.

To all whom it may concern:

Be it known that I, JOHN BECKER, a citizen of the United States, and a resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Automatic Wire-Blank-Cutting Apparatus, of which the following is a specification.

The object of my invention is to afford simple but effective mechanism whereby wire blanks for various purposes may be conveniently and expeditiously severed from a wire automatically fed through the apparatus, and whereby the latter may be quickly and conveniently adjusted and adapted to the formation of wire blanks of various prescribed lengths.

The invention consists in the specific combination and arrangement of parts described and claimed, distinctive features being the means whereby the wire feed is rendered automatic, and whereby the blanks are severed from the feed wire, all as hereinafter more fully set forth.

In the accompanying drawings,

Figure 1, is what may be designated as a front elevation of my automatic wire blank cutter;

Fig. 2, is a top view thereof;

Fig. 3, is a cross section of the thrust crank arm and wrist pin block taken upon plane of line 3—3, Fig. 1;

Fig. 4, is a vertical longitudinal sectional elevation taken upon plane of line 4—4, Fig. 2;

Fig. 5, is an end elevation of the thrust crank arm;

Fig. 6, is a sectional detail of the feed slide fulcrum extension arm;

Fig. 7, is a sectional detail illustrative of the relative positions of the wire cutting mechanism at shearing point;

Fig. 8, is a sectional detail taken upon plane of line 8—8, Fig. 2;

Fig. 9, is a sectional elevation of the upper part of the stationary guide post and its clutch pawl;

Fig. 10, is a front view of the parts shown in Fig. 9.

The base B, of the apparatus is adapted for attachment to any suitable table or support, being formed with screw or bolt holes b , b , for this purpose. It is also formed with the coincident standards b' , b^2 , affording bearings in which the drive shaft

D, is journaled, and with a medial standard b^3 , to which the cutter trunnion T, is rigidly secured by any suitable means, as by the mechanical expedient shown in the drawings and more particularly in Fig. 8, by reference to which it will be seen that the trunnion piece is held against movement on the medial standard b^3 , by means of a nut t' , and dowel pin t^2 . The hub c , of the cutter rock lever C, is retained upon the trunnion T, by means of the nut t^3 .

The rear extremity of the drive shaft D, is provided with the usual drive and idler pulleys D' , D^2 ; and to its front end is rigidly attached the thrust crank arm D^3 .

S, is the feed slide, resting on bearing surfaces b^4 , b^5 , (Fig. 4,) on the base B, and to which it is confined, and upon which it is supported laterally by strap caps b^6 , b^7 , rigidly secured to said base B, in such manner as to admit of the longitudinal reciprocatory movement of said slide.

This reciprocatory movement of the slide S, is effected by means of the rod or pitman P, pivotally connected at one extremity to the slide S, and at the other to a wrist pin W, which latter is adjustable upon the thrust crank arm D^3 . It is obvious that this adjustment of the wrist pin W, upon the thrust crank arm D^3 , and with relation to the axis of the drive shaft D, may be effected by resort to various mechanical expedients, so that I do not wish to limit myself in this respect, the essential feature in this connection being the provision of means whereby the effective length of stroke of the pitman P, may be varied, limited, and prescribed for the purpose of adjusting the extent of reciprocation of the feed slide S, to the length of wire blank desired.

With this understanding, I will describe the means of stroke adjustment shown in the drawings by way of exemplification. Thus the thrust crank arm D^3 , is formed with a medial radial slot or groove d , having the inturned lip flanges d' , d' , which confine the broad head w , of the wrist pin within the groove d , while admitting of its adjustment longitudinally therein. The details of this construction of wrist pin W, will be understood by reference more particularly to Fig. 3, by which it will be seen that the pin is provided with a binding sleeve w' , the base flange w^2 , of which bears against the outer surfaces of the lip flanges d' , d' , of the

thrust crank arm D³, so that said lip flanges d', d', may be pinched between the wrist pin head w, and said base flange w², of the binding sleeve w', by means of a nut w³, screwing into the threaded outer end of the wrist pin W. This end of the pitman rod P, is in fact fulcrumed directly upon the said wrist pin sleeve w', being held in pivotal engagement therewith by a nut w⁴, screwing upon the threaded outer end of said sleeve w'. By this construction of wrist pin, considered as a unitary device, the clamping of the pin to the thrust crank arm D³, is effected without subjecting the pitman rod to direct pressure upon, or frictional contact with, the said thrust crank arm D³, so that security of adjustment is attained combined with freedom of pivotal movement of the pitman. The binding sleeve w', may be formed with a pointer w^x, (Fig. 1) for use in conjunction with a scale d^x, on the thrust crank arm D³, as shown in Fig. 1, to facilitate the adjustment of the wrist pin W, as related to the axis of the drive shaft D.

The other or rear end of the pitman rod P, is pivotally connected with the lateral extension arm or post s, which is rigidly secured to what may be designated as the rear end of the feed slide S, said extension post s, bridging over and compensating for the space between the slide S, and the thrust crank arm D³, as will be seen by reference to Fig. 2. In the construction shown (although I do not limit myself in this respect) the lateral extension post s, is formed with a shouldered and screw threaded extremity s', by which it is attached to the slide, its other extremity s², being also shouldered and screw threaded for engagement with a nut s³, by which this end of the pitman is retained in pivotal connection with the extension post s, and hence with the slide S.

Rigidly attached to or forming a part of the rear end of the feed slide S, is a guide post s⁴, having an eye hole s^x, through which the feed wire f, is passed. A similar, but stationary guide post b⁶¹, consisting in the construction shown, of a standard of which the strap cap b⁶, forms the base, is also provided with an eye hole, b^x, coincidental in alinement with the eye hole s^x, in the feed slide guide post s⁴, and for a like purpose, i. e., that of sustaining and advancing the wire feed f.

Each guide post s⁴, b⁶¹, is provided with a detent pawl (the post s⁴, with the pawl a, and the post b⁶¹ with the pawl a') for the purpose of effecting the advance of the feed wire f, and preventing retractile movement thereof. Thus the pawl a, on the guide post s⁴, on the end of the feed slide S, clutches the wire during the forward thrust of said slide S, but yields during the retractile

movement of the slide so as to ride over said wire until the next advance stroke of the slide is begun when it immediately re-clamps the wire and pushes and pulls it forward, while the pawl a', on the stationary guide post b⁶¹, yields during the advance of the wire,—that is to say during the forward thrust of the feed slide S,—but immediately clamps the wire against retractile movement at the inception of the return thrust of said feed slide.

Both of these clutch pawls may be of like structure and arrangement, so that the description of one will answer for the other. Thus, in Figs. 9 and 10, which show the detent pawl on the stationary guide post in detail, the clutch pawl a', is pivotally supported at a², on the said post b⁶¹, above the eye hole b^x, through which latter the feed wire is passed, and the lower end of the pawl is bifurcated to straddle said hole and the wire when protuberant therefrom,—a spring a³, tending constantly to rock the pawl against the post. Hence obviously the pawl a', will yield to admit of the advance of the wire, but will automatically clutch and hold the wire against retractile movement.

From the eye hole b^x, in the stationary post b⁶¹, the wire passes to and through the perforation or eye hole t, formed diametrically through the cutter trunnion T, and in alinement with the eye holes b^x, and s^x, in both the aforesaid guide posts b⁶¹, and s⁴. To admit of this the cutter rock lever C, must of course be in such position that the slots c', c², in its hub c, are coincident with the said eye hole t, as in Fig. 4. The slots c', c², in the hub c, of the cutter rock lever C, are of sufficient length peripherally to admit of the rocking of the said lever without contact with the wire feed except at time of shearing, when the knife edge c^x, at the upper end of the slot c², overlaps the forward end of the perforation t, as shown in Fig. 7, thereby insuring the detachment of the wire blank from the end of the feed wire f. The cutting lever C, is thus rocked to shear the wire as stated, by a cam arm k, the hub k', of which is secured rigidly to the drive shaft D, in such position as to present said cam arm k, in vertical alinement with the upper end of the cutter rock lever C, as shown in Fig. 2,—a retractile spring r, attached at one end to the said rock lever C, and at the other to a stationary part, as the standard b², as shown in Figs. 1 and 2, tending constantly to hold the upper end of the rock lever in contactual engagement with the cam arm k, or the portion of its hub in alinement therewith. The cam arm k, is of course so timed as related to the cutter rock lever C, and to the reciprocal movement of the feed slide S, as to effect the shearing action at the termination of the forward or feed thrust of said slide.

My automatic wire blank cutting machine is so simple that its operation will be readily understood, and is easily described. A coil or spool of suitable wire being supported in proper juxtaposition to the machine, and in such manner as to yield to the feed thereof, and the end of said wire having been passed through the eye holes s^x , b^x , and t , the rotation of the drive shaft D, will cause the thrust crank arm D^3 , to reciprocate the feed slide S. During the advance thrust of the feed slide S, the pawl a , on the slide post s^4 , will clutch and forward the wire, pushing it through the eye hole b^x , in the stationary post b^{61} , and through the diametrical eye hole t , in the cutter trunnion T. The cam arm k , rocks the cutter lever in such manner that the cutter edge c^x , shears off the end of the wire protuberant beyond the cutter trunnion T, at the termination of the said advance thrust of the feed slide S, and the pawl a' , on the stationary guide post b^{61} , clutches and holds the wire against retraction during the rear or retractile thrust of said feed slide S.

The length of the severed wire blank is of course equal to twice the distance of the wrist pin W, from the axial center of the drive shaft D, so that by adjusting said wrist pin W, upon the thrust crank arm D^3 , any desired length of blank may be prescribed within the limit of the length of said crank arm.

The action of my apparatus is automatic in that it will feed itself and turn out blanks continuously as long as the drive shaft is rotated, and as long as the wire supply is available.

What I claim as my invention and desire to secure by Letters Patent is,

1. Automatic wire blank cutting mechanism of the character designated, comprising a drive shaft, a thrust crank arm rigidly secured thereto, a pitman pivotally connected with said thrust crank arm and with a wire feed slide, said wire feed slide,

means on said slide for clutching and forwarding a wire during the advance thrust of the slide and yielding to said wire during the retractile thrust thereof, means mounted on a stationary part for clutching said wire during the retractile movement of the slide and for yielding to the wire during the advance thrust of the slide, a stationary trunnion formed with an eye hole for the wire, a rock lever fulcrumed on said trunnion and formed with a shearing edge adapted to sever the part of the wire protuberant beyond said trunnion, and a cam arm on the drive shaft timed to rock said rock lever at the termination of the forward thrust of the feed slide, for the purpose described.

2. Automatic wire blank cutting mechanism of the character designated, comprising a drive shaft, a thrust crank arm rigidly secured thereto, a wrist pin adjustably secured to said thrust crank arm in such manner that the length of thrust may be varied to prescribe the length of wire blank, a pitman pivotally connected with said wrist pin and with a wire feed slide, said wire feed slide, means on said slide for clutching and forwarding a wire during the advance thrust of the slide and yielding to said wire during the retractile thrust thereof, means mounted on a stationary part for clutching said wire during the retractile movement of the slide and for yielding to the wire during the advance thrust of the slide, a stationary trunnion formed with an eye hole for the wire, a rock lever fulcrumed on said trunnion and formed with a shearing edge adapted to sever the part of the wire protuberant beyond said trunnion, and a cam arm on the drive shaft timed to rock said rock lever at the termination of the forward thrust of the feed slide, for the purpose described.

JOHN BECKER.

Witnesses:

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DOROTHY MIATT.