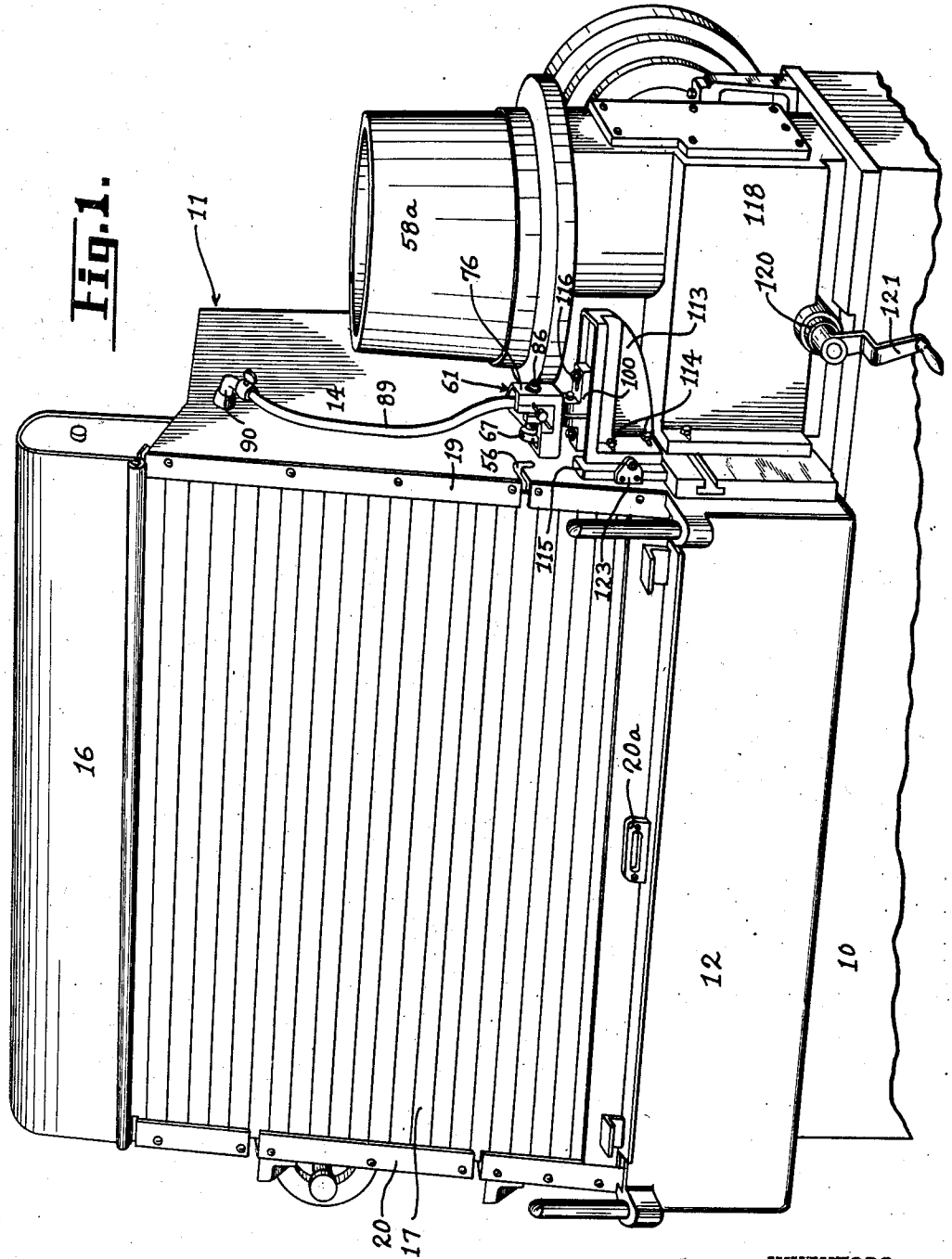
Feb. 8, 1938. W. D. PIERSON ET AL 2,107,799

HIGH SPEED WIREDRAWING MACHINE

Original Filed Feb. 3, 1934 3 Sheets-Sheet 1

Fig. 1.



INVENTORS
William D. Pierson
BY George W. Jackman.
H. G. Manning
ATTORNEY

Feb. 8, 1938. W. D. PIERSON ET AL 2,107,799

HIGH SPEED WIREDRAWING MACHINE

Original Filed Feb. 3, 1934 3 Sheets-Sheet 2

Fig. 3.

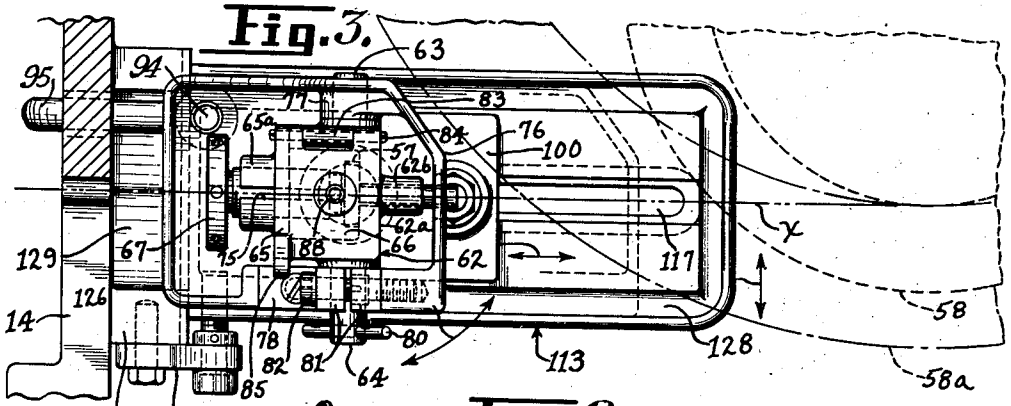


Fig. 2.

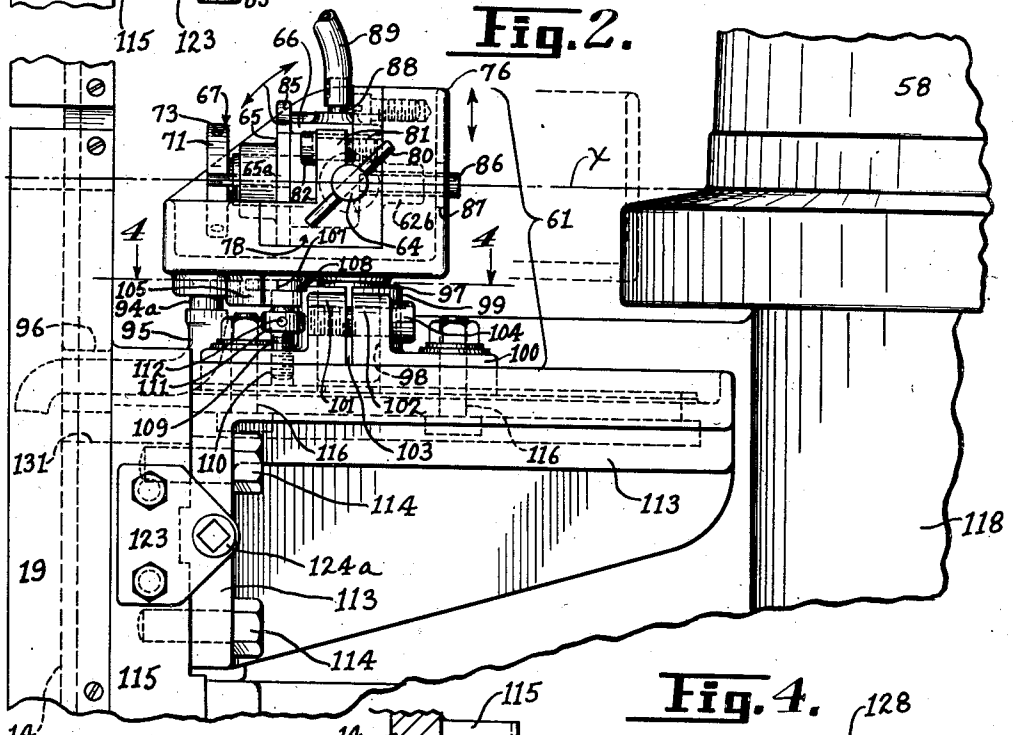


Fig. 5.

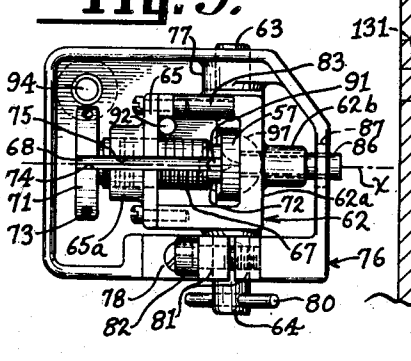
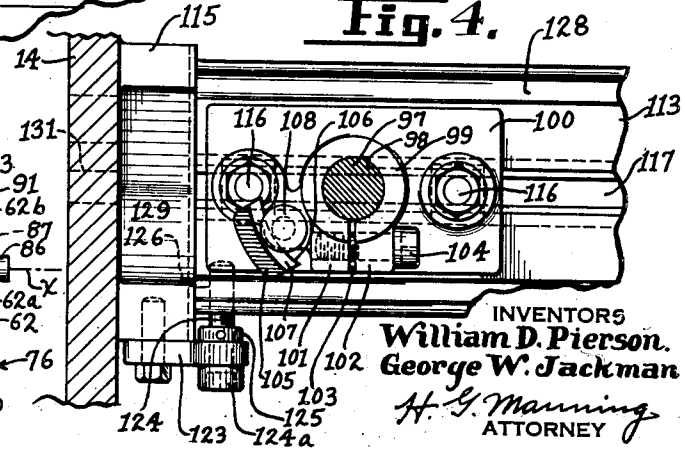


Fig. 4.



INVENTORS
William D. Pierson.
George W. Jackman
H. G. Manning
ATTORNEY

Feb. 8, 1938. W. D. PIERSON ET AL 2,107,799

HIGH SPEED WIREDRAWING MACHINE

Original Filed Feb. 3, 1934 3 Sheets-Sheet 3

Fig. 6.

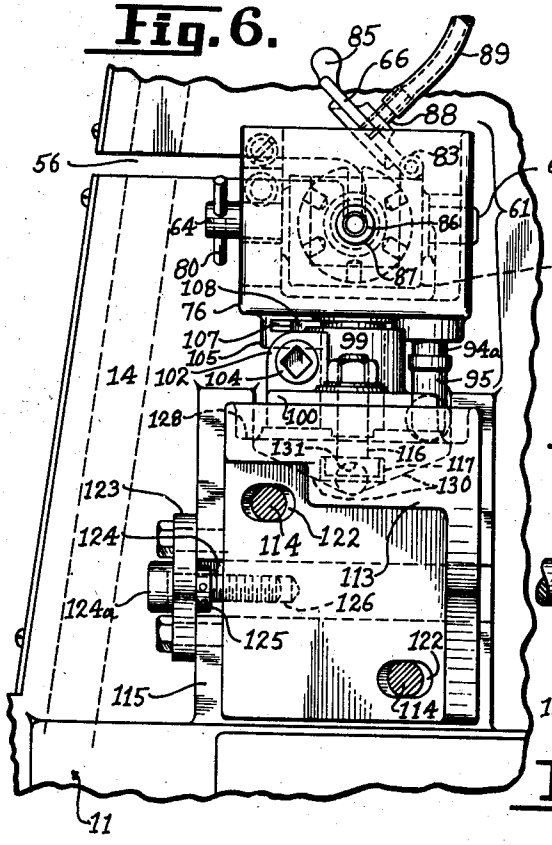


Fig. 7.

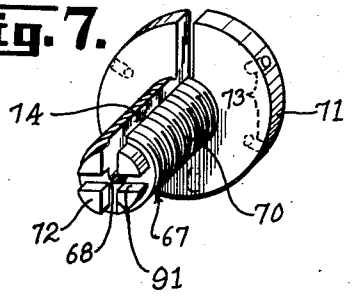


Fig. 9.

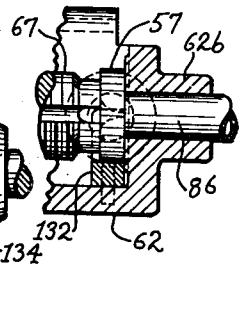


Fig. 8.

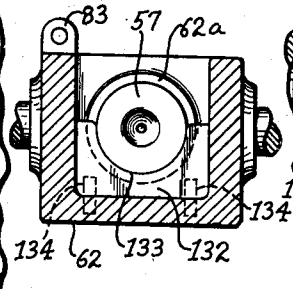


Fig. 10.

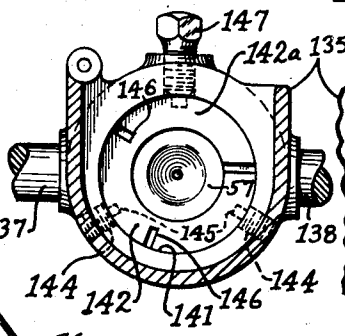


Fig. 11.

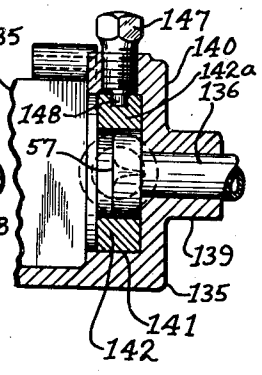
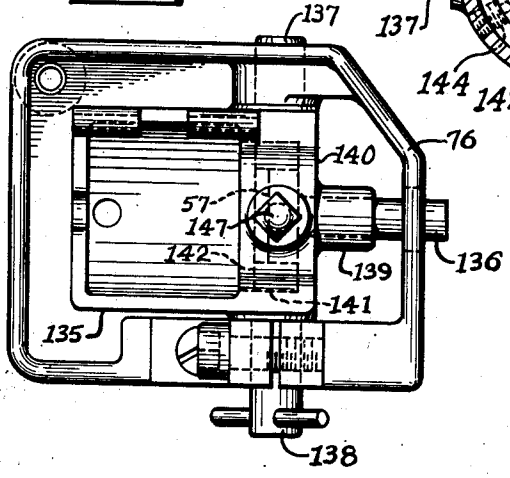


Fig. 12.



Inventors
William D. Pierson.
George W. Jackman.
H. G. Manning
Attorney

Patented Feb. 8, 1938 2,107,799

UNITED STATES PATENT OFFICE

2,107,799

HIGH SPEED WIREDRAWING MACHINE

William D. Pierson and George W. Jackman, Waterbury, Conn., assignors to The Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., a corporation of Connecticut

Original application February 3, 1934, Serial No. 709,646. Divided and this application February 19, 1935, Serial No. 7,264

31 Claims. (Cl. 205—16)

This invention relates to continuous wiredrawing machines, and more particularly to a high speed multiple-die wiredrawing machine of the "cabinet" type, in which the wire may be "strung-up" with a minimum loss of time.

This applicatoin is a division of our prior application, Serial No. 709,646, filed February 3, 1934.

One object of this invention is to provide a wiredrawing machine of the above nature in which the side walls of the inclosing cabinet are provided with slots, thus permitting the dies to be strung upon the wire at spaced intervals before inserting the wire in the wiredrawing machine.

A further object is to provide a wiredrawing machine of the above nature having means for securely holding the final die in adjustable position in a die box to permit the proper "casting" of the wire as it is wound upon a finishing block after leaving the machine.

A further object is to provide a "casting" device of the above nature in which the final die box is capable of universal angular adjustment, and may also be moved vertically and horizontally.

A further object is to provide a machine of the above nature which will be relatively simple in construction, inexpensive to manufacture, easy to install and manipulate, economical of power and floor space, and very efficient and durable in use.

With these and other objects in view there have been illustrated on the accompanying drawings two forms in which the invention may be conveniently embodied in practice.

In the drawings:

Fig. 1 represents a perspective view of the wiredrawing machine and casting mechanism with the roll-top door of the cabinet in closed position.

Fig. 2 is a front elevation of the casting mechanism for the final drawing die.

Fig. 3 is a plan view of the same.

Fig. 4 is a horizontal fragmentary sectional view of the same, taken along the line 4—4 of Fig. 2.

Fig. 5 is a plan view of the die cup and holder, with the cover plate removed.

Fig. 6 is a right end view of the casting mechanism.

Fig. 7 is a detail perspective view of the slotted die-clamping screw employed in the casting mechanism.

Fig. 8 is a transverse vertical sectional view taken through the final die cup and showing the die adaptor in place.

Fig. 9 is a longitudinal fragmentary sectional view taken through the same.

Fig. 10 is a vertical transverse sectional view of the preferred form of final die cup having an adjustable die clamping ring.

Fig. 11 is a fragmentary longitudinal vertical sectional view of the same.

Fig. 12 is a plan view similar to Fig. 5, showing the preferred form of final die cup and holder in operating position.

Wiredrawing mechanism

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates the supporting frame of the machine which supports a "cabinet" for housing the wiredrawing mechanism. The cabinet 11 comprises a basin-like base 12, a rear wall, not shown, and side walls 14.

The top of the cabinet 11 is closed by means of a thin curved hood member 16, within which is journaled a roll-top door 17 having slidable engagement in suitable opposed grooves provided adjacent the front slightly inclined edges 19 and 20 of the side walls 14. The door 17 is adapted to be drawn downwardly by a suitable handle 20a for completely sealing the front of the compartment in the cabinet 11, as shown in Fig. 1.

Final drawing die

After leaving the final cone of the machine, the wire is passed through an open slot 56 (see Figs. 1 and 6) formed in the front of the right-hand wall 14 of the machine, and is delivered to a final drawing die 57 from which it is wound upon a finishing block 58.

"Casting" mechanism

During wiredrawing, as the wire is processed through the several dies, the metal hardens and unless the final drawing die is positioned at the proper angle with respect to the finishing block 58, the coiled wire will spring out to a larger diameter than the block on which it is drawn and the coiled wire when lifted from the block will become tangled up and difficult to handle. In order to overcome the above disadvantages, the present invention contemplates the provision of a mechanism to accurately adjust the position of the final drawing die 57, and thereafter firmly lock it in adjusted position.

The "casting" mechanism is generally indicated by the numeral 61 and is adapted to hold the final die 57 in any desired position and angle

between the right cabinet wall 14 and the coiling block 58. The casting mechanism 61, as best shown in Figs. 2 to 6 inclusive, is adapted to be detachably secured to the right wall 14 of the wire machine.

The final drawing die 57 is located in a die cup 62 which is adapted to rock upon a pair of lateral trunnions 63 and 64. Mounted upon the die cup 62 is a detachable wall plate 65, and said cup is covered by a top hinged lid 66. The wall plate 65 is provided with a tapped outwardly projecting boss 65a which is adapted to receive a special die clamping screw 67 (see Fig. 7), which serves to tightly clamp the final die 57 against the right wall 62a of the die cup 62. The clamping screw 67 consists essentially of a threaded shank 70 having an enlarged flanged head 71 at one end, and a reduced portion 72 at its opposite end for abutting against the face of the die 57. The flanged head is provided with a plurality of equally spaced radial recesses 73 on its circumference which may be engaged by any suitable tool, such as a pin wrench, for tightening the screw 67 against the die 57.

The wire x is adapted to pass through a longitudinal hole 68 in the screw 67, and in order to facilitate the placing of the already strung die 57 in the die cup 62, said screw 67 is provided with a longitudinal open slot 74 extending the entire length thereof and forming a radial passage for the wire x into the hole 68. A vertical slot 75 is provided in the upper part of the detachable wall plate 65, and by indexing the slot 74 in the screw 67 to aline with the slot 75 in the wall plate 65, the wire x and the attached die 57 may be readily dropped into the die cup 62, after which the screw 67 may be turned into die clamping position. The slots 74 and 75 will ordinarily be out of alinement and the wire will be positively prevented from slipping out of place.

The die cup 62 is mounted to swing on a horizontal axis by means of the trunnions 63 and 64 which have pivotal engagement in an open pan-shaped box 76. The rear trunnion 63 is journaled in a hub 77 formed integral with the rear wall of the box 76 while the front trunnion 64 is journaled in a set-in portion 78 detachable with the front wall of said box 76. As shown in Figs. 2 and 5, the trunnion 64 protrudes through the front wall of the box 76 and is provided with a transverse handle rod 80 to facilitate the rocking of the die cup 62 about its horizontal axis. The upper part of the set-in wall 78 is provided with a split bifurcated section 81, the side jaws of which are adapted to be clamped tightly upon the trunnion 64, by means of a transverse set screw 82.

In order to prevent any lubricant from spattering upon the winding block 58, the cover lid 66 previously referred to, and which is hinged to a tubular section 83 on the rear wall of the die cup 62 by means of a hinge pin 84, serves to completely seal the final drawing die 57 therewithin. The front edge of the cover lid 66 may be provided with a handle lug 85 for facilitating the manipulation thereof. The pressure of the die 57 upon the wall 62a of the die cup 62 will, of course, be enchanced by the pull of the wire passing through the die 57, thus increasing the tightness of its liquid seal between said adjacent surfaces to prevent any lubricant from passing by the die.

After the wire x leaves the die 57, it passes through a tube-like extension 86 mounted within a tubular boss 62b, forming an integral part of the cup 62 (see Figs. 3, 5 and 9). The extension 86 is adapted to protrude through an enlarged aperture 87 in the end wall of the die cup box 76.

In order to supply a steady stream of lubricant to the final drawing die 57, the cover lid 66 of the die cup 62 is provided with a substantially central vertical nipple 88, to which may be attached a flexible tube 89 leading to a suitable adjustable flow regulating stop-cock 90 located on the outside right wall 14 of the machine, and having suitable connection with the lubricating supply pipe 29a (not shown) within the cabinet 11. By reason of the fact that the final die 57 in both forms of die cup is clamped in tight face contact with the right wall 62a (140) of said die cups, it will be impossible for any lubricant to escape from the die cup, and the wire as it leaves the die box is thus maintained in a dry condition,—an important advantage in wiredrawing machines.

As noted in Figs. 5 and 7, the reduced end 72 of the clamping screw 67 is provided with a pair of crossed grooves 91 cut into its face surface whereby the lubricant flowing into the die cup 62 will have direct access with the center hole of the die 57 to properly lubricate the wire as it enters the final die 57. A suitable drain hole 92 is provided in the base of the die cup 62 whereby the lubricant will be drained therefrom into the die cup box 76. The base of the box 76 in turn is also provided with a drain aperture 94, into which is fitted a pipe nipple 94a, upon which is attached a flexible hose 95 for conducting the drained lubricant back into the main casing of the machine through an aperture 96 in the wall 14.

The final die cup box 76 is provided with a depending cylindrical stud 97 pivotally engaged within a split hollow cylinder 98 concentrically formed in a boss 99 forming an integral part of a longitudinally sliding bracket 100. The boss 99 is formed with a pair of lateral ears 101 and 102 slightly spaced apart to provide a clearance slot 103 therebetween.

In order to lock the die cup box 76 in adjusted position on the vertical axis of the stud 97, provision is made of a transverse binding screw 104 having threaded engagement in the ear 101.

It is to be noted that the vertical axis of the depending stud 97 of the box 76, the horizontal axes of the two trunnions 63 and 64, and the horizontal axis of the wire x intersect each other at a common point located approximately in the center of the die 57 (see Fig. 5). By means of this construction, the wire x in passing through the final die will be bent the exact amount to give it the proper "cast" before being wound upon the block 58.

It will be understood from the above that the final die 57 not only has a universal pivotal movement about both vertical and horizontal axes, but it is also possible to adjust the final die vertically. As will be described later, the final die also may be given a horizontal adjustment in all directions.

In order to accomplish the vertical adjustment, micrometically or by small increments, the under side of the box 76 is provided with an integral boss 105 having an arcuate vertical face 106 within which is cut an arcuate rectangular groove 107 for receiving the flanged head 108 of a stud screw 109. The screw 109 is threadedly engaged

in a tapped hole 110 formed in the sliding bracket 100, and is provided with an intermediate integral collar 111 having a plurality of radial holes 112 drilled therein. By engaging a pin wrench or other suitable tool in the apertured collar 111, the stud screw 109 may be manipulated for vertically elevating or lowering the cup box 76 to any desired finely adjusted position (see Fig. 2).

The sliding bracket 100 is slidably mounted upon an angular supporting bracket 113 which in turn is detachably secured as by cap screws 114 to a substantially heavy boss 115 formed integral with the right side wall 14 of the machine. In order to anchor the sliding bracket 100 in adjusted longitudinal position upon the bracket 113, the bracket 100 is provided with a pair of T-bolts 116, 116 located on opposite sides of the vertical boss 99 and adapted to engage in a longitudinal T-slot 117 formed in the bracket 113.

The object of adjusting the sliding bracket 100 and supported parts as a unit, is to set the final die 57 as close as possible to the take-up or finishing block 58, it being understood that various sizes of take-up blocks may be interchangeably used on the same machine.

Fig. 2 illustrates in full lines the smallest size of block 58 which may be used and the same block is illustrated in Fig. 3 by dotted lines. The largest size of block which may be used on the machine is indicated in Fig. 3 by the dot-and-dash line 58*a*, and in Fig. 1 by full lines. The die holding unit 61 is shown in full lines in Figs. 2 and 3 in the proper position for winding upon the largest size of block 58*a*. The dotted outline of the die cup box 76 shown in Figs. 2 and 3 illustrates the proper position for setting the unit when the smallest size of block 58 is employed.

In order to permit the block 58 to be adjusted laterally so that the cylindrical surface of the block will be in tangential alinement with the wire as it is delivered from the final die 57, the block housing 118 is slidably supported upon the supporting frame 10 of the machine, and is provided with a suitable screw mechanism 120 operated by means of an external crank handle 121 which may be manually operated to forwardly or rearwardly move the block housing 118 and surmounted block 58 (or 58*a*) to any desired location.

In order to produce a close lateral adjustment of the casting mechanism 61 for properly alining the die 57 with the roughly adjusted block 58, the holes 122, 122 in the angular bracket 113 surrounding the cap screws 114 are horizontally elongated (see Fig. 6). A vertical plate 123 is rigidly secured to the wall boss 115 and supports a horizontal stud screw 124 held in rotatable engagement therein by means of a collar 125 fixed to the shank of said screw 124 on the opposite side of said plate from the head 124*a* of said screw. The shank of the screw 124 is threadedly engaged in a hole 126 tapped into the side of the single bracket 113.

From the above construction, it will be obvious that by slightly loosening the bracket screws 114, and turning the head 124*a* of the screw 124, the bracket 113 and entire casting mechanism 61 may be minutely adjusted laterally, as a unit.

It will thus be seen that the final die of the wiredrawing machine is so mounted as to have universal angular rocking adjustment, up and down vertical adjustment, and lateral and longitudinal and horizontal adjustment.

In case any lubricant should spatter or leak out of the die cup holder 76, it will be caught by the pan-shaped top of the angular bracket 113, said top being provided with an upright outer rim within which is a groove 128 for conducting the lubricant rearwardly into a catch basin 129 formed in the upper part of the boss 115 (see Fig. 3). As clearly shown in Fig. 6, the bottom of the basin 129 is formed with a pair of inclined surfaces 130 which meet at the center and permit the lubricant to flow through a drain aperture 131 provided in the wall 14 and be drained back into the cabinet 11.

Adaptor block for final die

In order to facilitate the setting of the final die 57 within the die cup 62 during the "stringing-up" operation of the machine, provision is made of an adaptor block 132 which, as shown in Figs. 8 and 9, is substantially rectangular in shape and is detachably seated within the die cup 62 under the die 57. The adaptor block 132 is provided in its upper face with a semi-circular cut-out portion 133 for receiving the die 57, and from its bottom extend a pair of depending dowel pins 134, 134 for engagement in a pair of corresponding holes provided in the base of the die cup 62. It will be understood that a number of blocks 132 having different size cut-outs 133 may be provided for the die cup 62 so as to selectively accommodate the various sizes of dies that may be used.

In use it will only be necessary to drop the die already strung upon the wire x in place, and tighten the clamping screw 67 to hold said die rigidly in place within the die cup 62.

Preferred form of final die cup

In Figs. 10, 11, and 12 is shown the preferred form of holding cup 135 for the final die 57 wherein the special die clamping screw 67 and the adaptor block 132 of the first form of the invention have been omitted. The preferred die cup 135 is provided with a tubular extension 136, and oppositely extending trunnions 137 and 138 for pivotal engagement in the final die cup box 76. The tubular extension 136 is fitted into an apertured boss 139 formed on the outside of the die cup and integral with the wall 140 thereof. The inner side of the wall 140 is provided with a countersunk circular socket 141 for receiving a closely fitting split annular ring 142. The die cup 135 is preferably made semi-cylindrical in shape and is provided on its curved portion with a pair of headless radial set-screws 144, 144. Each set-screw 144 is formed on its inner end with a reduced point 145, 145 which is adapted to engage in corresponding apertures formed within the outer periphery of the split annular ring 142 for holding the latter in place.

In order to increase the resiliency of the split annular ring 142, one or more radial slots 146 extend from the exterior thereof partly therethrough, and the upper sections of said ring are adapted to be sprung downwardly by means of a square-headed set screw 147 having threaded engagement in the upper section of the wall 140. The inner end of the set screw 147 is also provided with a reduced point 148 for engaging in a corresponding socket provided in the circumference of the upper bendable section 142*a* of the annular ring. It will be obvious from the above construction, that merely by screwing up the set screw 147, the die 57 which is positioned within the annular ring 142 will be rigidly clamped in place.

Operation

In the operation of "setting up" the final drawing die at the delivery end of the machine, the portion of the wire between the last two drawing dies will be slipped into the slot **56** in the right-hand wall **14** in readiness for setting the final die **57** in the "casting" mechanism **61**. In order to set up the final die **57**, it is first necessary to adjust the clamping screw **67** so that the longitudinal slot **74** thereof will be in line with the slot **75** formed in the wall plate **65** of the die cup **62**. With the parts in this position, the initial end of the wire *x* may be inserted through the tubular extension **86** and the final die **57** readily dropped into position within the seat **133** of the adaptor block **132**. It is to be understood that the operator will leave an ample length of wire beyond the final die **57** to allow said wire to be wound about the drawing block **58** a sufficient number of times so as to prevent slipping when the block **58** is rotated. With the final die **57** thus properly set in the adaptor block **132**, the clamping screw **67** may then be tightened against the die **57** so as to hold it tightly against the die cup wall **62***a*. The die **57** may then be adjusted at the proper angle and in the proper horizontal and vertical position to give the wire the proper cast as it is delivered to the block **58**, by manipulating the mechanism in the casting mechanism **61**.

In the operation of assembling the die **57** to the preferred form of die holding cup **135**, shown in Figs. 10 and 11, it will be understood that the split annular ring **142** will first be placed in the socket **141** of the cup **135**. The screws **144**, **144** will then be inserted and rotated until the points **145** pass into the corresponding apertures in the ring **142**. The upper bendable section **142***a* of the ring **142** is normally in its outermost sprung position when the die **57** is not in place. The end of the wire upon which the final die **57** has been previously strung may then be inserted through the tubular extension **136**, permitting the final die **57** to be slipped into the split ring **142**. The set screw **147** will then be screwed down and will force the upper section **142***a* downwardly for clamping the die **57** tightly in its properly set position. The proper "cast" for the wire may then be readily obtained by adjusting the die cup **135** in the same manner as described above for the first form of the invention.

An important feature of the present invention lies in the fact that the drawn wire beyond the final die may be cut off from the remainder of the coil still in the machine in any desired length and removed from the block without disturbing the setting of the dies or casting mechanism in any way. The remaining wire may then be attached to the block and the drawing process continued as before.

While there have been disclosed in this specification two forms in which the invention may be embodied, it is to be understood that these forms are shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosures but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In a wiredrawing machine, a cabinet, wiredrawing mechanism located in said cabinet, a wire coiling mechanism located outside the wire exit end of said cabinet, means for rigidly holding a final drawing die intermediate said cabinet and said coiling mechanism, said holding means being adjustable through angles around horizontal and vertical axes to produce any desired "cast" in the wire being coiled, and means to rigidly secure said holding means in all of its adjusted positions.

2. In a wiredrawing machine, wiredrawing mechanism, mechanism for coiling the drawn wire as it comes from said wiredrawing mechanism including a finishing block, mechanism located intermediate said wiredrawing mechanism and said coiling mechansm for casting the wire being coiled in accordance with the form of said finishing block, said casting mechanism comprising a bracket, a box having adjustable engagement with respect to said bracket for pivotal movement on a vertical axis, a die cup in said box for holding the final drawing die, said die cup being pivotally mounted in said box for movement on a horizontal axis, means for clamping said final die tightly within said die cup, and means to permit vertical and horizontal adjustment of said bracket.

3. In a wiredrawing machine, wiredrawing mechanism, mechanism for coiling the drawn wire as it comes from said wiredrawing mechanism including a finishing block, mechanism located intermediate said wiredrawing mechanism and said coiling mechansm for casting the wire being coiled in accordance with the form of said finishing block, said casting mechanism comprising a vertically and horizontally movable bracket, a box having adjustable pivotal engagement with respect to said bracket on a vertical axis, a die cup pivotally mounted in said box on a horizontal axis for holding the final drawing die, whereby said die is mounted for universal angular movement.

4. In a wiredrawing machine, a cabinet containing wiredrawing mechanism, mechanism outside of said cabinet for coiling the drawn wire as it comes from said wiredrawing mechanism, mechanism located intermediate said cabinet and said coiling mechanism for casting the wire being coiled, said casting mechanism comprising a bracket, a box having adjustable engagement with respect to said bracket, a die cup in said box for holding the final drawing die, said die cup being pivotally mounted in said box, and means for clamping said final die tightly within said die cup, said die cup box having a protecting cover hinged to the top thereof.

5. In a wiredrawing machine, wiredrawing mechanism, mechanism for coiling the drawn wire as it comes from said wiredrawing mechanism, mechanism located intermediate said wiredrawing mechanism and said coiling mechanism for casting the wire being coiled, said casting mechanism comprising a bracket, a box having adjustable engagement with respect to said bracket, a die cup in said box for holding the final drawing die, said die cup being pivotally mounted in said box, means for clamping said final die tightly within said die cup, a cover for said die cup box, and a flexible lubricating pipe leading into the top of said protecting cover.

6. In a wiredrawing machine, a wiredrawing cabinet, a mechanism for coiling the drawn wire, a wire casting mechanism located between said cabinet and said coiling mechanism, said casting mechanism comprising a supporting bracket secured to said cabinet, a sliding bracket horizon-

tally adjustable on said supporting bracket, a die box mounted for adjustable vertical movement with respect to said sliding bracket, a die cup in said die box mounted for vertical angular movement around a horizontal axis, and means for locking said die cup in adjusted position.

7. In a wiredrawing machine, wiredrawing mechanism, mechanism for coiling the wire as it leaves said wiredrawing mechanism, casting mechanism located between said wiredrawing mechanism and said coiling mechanism, said casting mechanism comprising an adjustable die holding cup, means for positioning said die in said cup, and means for detachably clamping said die in said positioning means, said clamping means comprising a slotted screw threadedly engaged in said cup and adapted to engage said die when screwed up, the slot of said screw permitting insertion of said wire from above.

8. In a wiredrawing machine, a cabinet, wiredrawing mechanism in said cabinet, mechanism for coiling the wire as it leaves said cabinet, casting mechanism located between said cabinet and said coiling mechanism, said casting mechanism comprising an adjustable die cup, means for positioning a die at the outer end of said cup, a flanged clamping screw having threaded engagement in the wall of said cup opposite from said die, said screw holding wall having a vertical slot, said flanged screw having a side slot running its entire length adapted to be brought into alinement with said wall slot to permit the wire and the final die strung thereon to be dropped into said die cup and the die seated in said cup.

9. In a wiredrawing machine, a cabinet, wiredrawing mechanism in said cabinet, mechanism for coiling the wire as it leaves said cabinet, casting mechanism located between said cabinet and said coiling mechanism, said casting mechanism comprising an adjustable die box, an adjustable die cup in said box, a flexible split ring for positioning the final die in said cup, and means extending inwardly from the exterior of said cup for clamping said ring upon said die.

10. In a wiredrawing machine, wiredrawing mechanism, mechanism for coiling the wire as it leaves said wiredrawing mechanism, casting mechanism located between said wiredrawing mechanism and said coiling mechanism, said casting mechanism comprising a vertically and horizontally movable bracket having a vertical socket, a final die-holding box having a shaft extending down into said socket and rotatable about the vertical axis of said shaft, and means adjustable by small increments for varying the vertical sliding position of said die holding box.

11. In a wiredrawing machine, a wiredrawing cabinet, mechanism for coiling the drawn wire as it comes from said cabinet, mechanism located intermediate said cabinet and said coiling mechanism for casting the wire being coiled, said casting mechanism comprising a supporting bracket attached to said cabinet, a sliding bracket horizontally adjustable on said supporting bracket, a box carried by said sliding bracket and having vertical and rotatable adjustment with respect thereto, a die cup in said box for holding the final drawing die, said die cup being pivotally mounted in said box, and means for clamping said final die tightly within said die cup.

12. In a wiredrawing machine, a cabinet, wiredrawing mechanism in said cabinet, mechanism for coiling the wire as it leaves said cabinet, an adjustable die box located between said cabinet and said coiling mechanism, means to supply lubricant to said die box, and a drain pipe for conducting lubricant from said die box back into said cabinet.

13. In a wiredrawing machine, wiredrawing mechanism, mechanism for coiling the drawn wire as it comes from said wiredrawing mechanism, mechanism located intermediate said wiredrawing mechanism and said coiling mechanism for casting the wire being coiled, said casting mechanism comprising a bracket, a box having horizontal and vertical adjustable engagement with respect to said bracket, a die cup in said box for holding the final drawing die, said die cup being pivotally mounted in said box, the vertical adjustable axis of said box and the pivotal axis of said die cup passing through a common point in the center of said die, and means for clamping said final die tightly within said die cup.

14. In a wiredrawing machine, a wiredrawing cabinet, mechanism for coiling the drawn wire after it leaves said wiredrawing cabinet, a supporting bracket attached to said cabinet, a sliding bracket seated upon said supporting bracket and being horizontally adjustable thereon, a die box for holding the final die rotatably journaled in said sliding bracket along a vertical axis, and a die cup pivotally mounted in said box on a horizontal axis.

15. In a wiredrawing machine, a wiredrawing cabinet, mechanism for coiling the drawn wire after it leaves said wiredrawing cabinet, a supporting bracket attached to said cabinet and being transversely adjustable with respect thereto, a sliding bracket seated upon said supporting bracket and being horizontally adjustable thereon, a die box for holding the final die rotatably journaled in said sliding bracket along a vertical axis, and a die cup pivotally mounted in said box on a horizontal axis.

16. In a wiredrawing machine, a wiredrawing cabinet, a wire coiling block for receiving the drawn wire, a final die located between said cabinet and said block, means for adjusting said die to any desired angle to produce the correct "cast" in the wire, and means for adjusting said block transversely to bring the surface thereof into tangential alinement with the wire as it is delivered from said final die.

17. In a wiredrawing machine, a wiredrawing cabinet, a wire coiling block for receiving the drawn wire, a final die located between said cabinet and said block, means for adjusting said die to any desired angle to produce the correct "cast" in the wire, and manually operated means for adjusting said block transversely to bring the surface thereof into tangential alinement with the wire as it is delivered from said final die.

18. In a wiredrawing machine, a wiredrawing cabinet, means for coiling the drawn wire, mechanism between said cabinet and said coiling means for casting the wire being coiled in accordance with the peripheral curve of the coil, comprising a bracket attached to said cabinet, a box supported on said bracket, a final die holding cup pivotally mounted on a horizontal axis in said box, means extending in alignment with the axis of said cup through said box for manually rocking said cup to the desired adjusted position, and means to lock said cup rocking means.

19. In a wiredrawing machine, a lubricated wiredrawing mechanism having a final die, a cup embracing said final die and having a wire-exit aperture in one face thereof, an expansible ring in said cup encircling said die, releasable radially acting means engaging the periphery of said ring

for compressing said ring for holding the die in flat abutment with said face to prevent escape of lubricant from said cup and insure that the wire will emerge from said aperture in a dry condition.

20. In a die holder for a wiredrawing machine, a die box, a die, a compressible annular ring in said box for embracing said die, and means extending through a peripheral wall of said box and engaging said ring for compressing said ring tightly about said die.

21. In a die holder for a wiredrawing machine, a die box, a die, a compressible split annular ring in said box for embracing said die, and means extending through a peripheral wall of said box and engaging said ring for compressing said ring tightly about said die.

22. In a die holder for a wiredrawing machine, a box-like die-supporting member having a countersunk socket provided in the inner surface of one of its walls, a die, a split annular compressible ring for embracing said die and adapted to fit into said socket, and screw means threadedly engaged in said box and extending through a peripheral wall thereof to engage said ring for compressing said ring tightly about said die.

23. In a die holder for a wiredrawing machine, a box-like frame having a countersunk socket provided in the inner surface of one of its walls, a die, a split annular compressible ring for embracing said die and adapted to fit into said socket, said ring having a radial slot and a socket extending inwardly from its outer periphery, and screw means threadedly engaged in said frame and having a projection seating in said ring socket, said screw means being adapted to force said split ring tightly about said die.

24. In a wiredrawing machine, a finishing block upon which drawn wire from said machine is receivable, a final die directly preceding said block, means to permit rigid setting of said die to cast the wire passing therethrough at the proper angle in accordance with the curvature of said surface upon which the wire is receivable, and means to adjustably dispose said block to position said surface in tangential alinement with the wire as it is received.

25. In a wiredrawing machine, casting mechanism comprising an adjustable die box, an adjustable die cup in said box, a flexible split ring for positioning the final die in said cup, and means extending inwardly from the exterior of said cup for clamping said ring upon said die.

26. In a wiredrawing machine, casting mechanism comprising a bracket, a box having horizontal and vertical adjustable engagement with respect to said bracket, a die cup in said box for holding the final drawing die, said die cup being pivotally mounted in said box, the vertical adjustable axis of said box and the pivotal axis of said die cup passing through a common point in the center of said die, and means for clamping said final die tightly within said die cup.

27. In a wiredrawing machine, a supporting bracket, a sliding bracket seated upon said supporting bracket and being horizontally adjustable thereon, a die box for holding the final die, rotatably journaled in said sliding bracket along a vertical axis, and a die cup pivotally mounted in said box on a horizontal axis.

28. In a wiredrawing machine, a wire coiling block for receiving the drawn wire, a final die preceding said block, means for adjusting said die to any desired angle to produce the correct "cast" in the wire, and means for adjusting said block transversely to bring the surface thereof into the desired position with respect to the wire as it is delivered from said final die.

29. In a wiredrawing machine, a wire coiling block for receiving the drawn wire, a final die preceding said block, means for adjusting said die to any desired angle to produce the correct "cast" in the wire, and manually operated means for adjusting said block transversely to bring the surface thereof into tangential alinement with the wire as it is delivered from said final die.

30. In a wiredrawing machine, means for coiling the drawn wire, mechanism preceding said coiling means for casting the wire being coiled in accordance with the desired diameter of the coil, comprising a bracket, a box supported on said bracket, a final die holding cup pivotally mounted on a horizontal axis in said box, means extending in alignment with the axis of said cup through said box for manually rocking said cup to the desired adjusted position, and means to lock said cup rocking means.

31. In a wiredrawing machine, wiredrawing mechanism, mechanism for coiling the drawn wire as it comes from said wiredrawing mechanism, mechanism located intermediate said wiredrawing mechanism and said coiling mechanism for casting the wire being coiled, said casting mechanism comprising a bracket, a box having horizontal and vertical adjustable engagement with respect to said bracket, a die cup in said box for holding the final drawing die, said die cup being pivotally mounted in said box, the vertical adjustable axis of said box and the pivotal axis of said die cup passing approximately through a common point in the center of said die, and means for clamping said final die tightly within said die cup.

WILLIAM D. PIERSON.
GEORGE W. JACKMAN.

CERTIFICATE OF CORRECTION.

Patent No. 2,107,799. February 8, 1938.

WILLIAM D. PIERSON, ET AL.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 5, first column, line 6, claim 6, before the word "die" insert die box and said; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of March, A. D. 1938.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)