

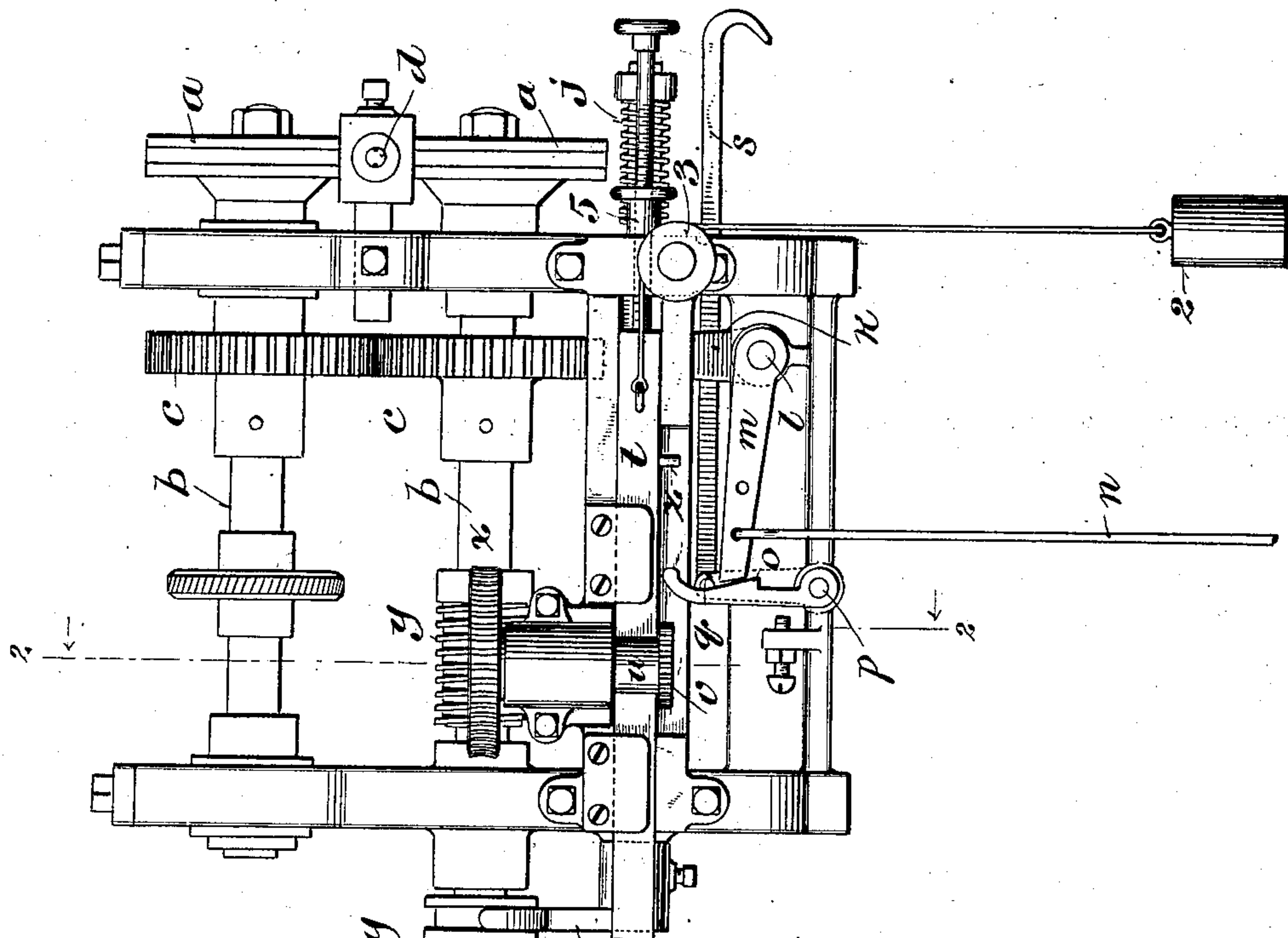
C. PFEIFFER.  
WIRE TWISTING AND WEAVING MACHINE.

APPLICATION FILED MAR. 23, 1903.

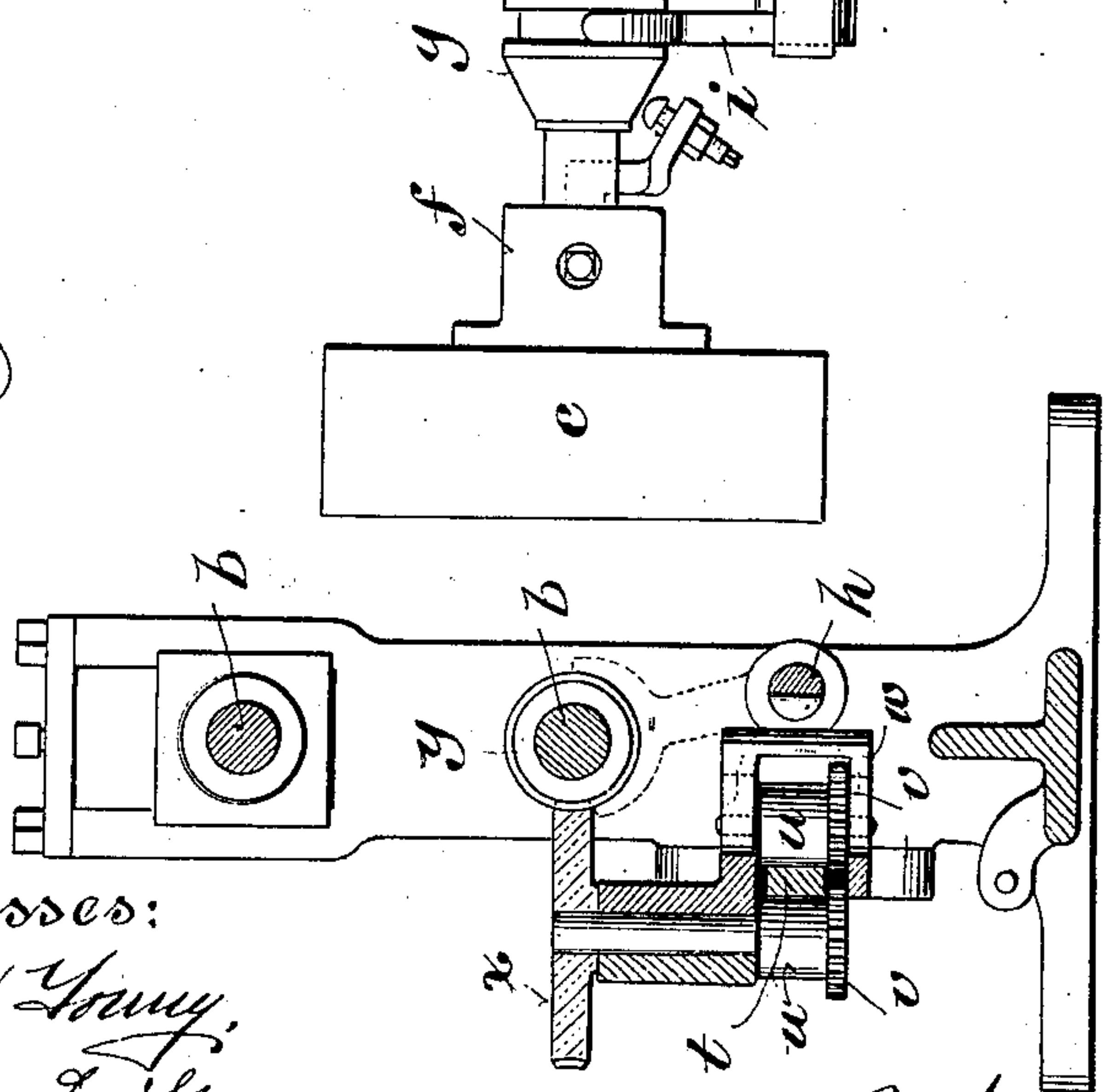
NO MODEL.

2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



Witnesses:

Geo. W. Young,

Chas. F. Govv.

Inventor:

Charles Pfeiffer

By Wicker Hendus Smith Patent Attorney





# UNITED STATES PATENT OFFICE.

CHARLES PFEIFFER, OF MILWAUKEE, WISCONSIN.

## WIRE TWISTING AND WEAVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,230, dated October 27, 1903.

Application filed March 23, 1903. Serial No. 149,058. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES PFEIFFER, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Wire Twisting and Weaving Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

10 This invention relates to machines for twisting or forming wire into spirals and weaving the same together for beds or the like, and particularly to stop mechanism for such machines. Its main objects are to automatically  
15 stop a machine of this kind so that successive spirals as they are delivered by the twister shall terminate exactly at the same point or in line with each other, thereby avoiding waste of material, loss of time, and  
20 the labor and annoyance of trimming the spirals to exact length or to line, to provide for the easy and accurate adjustment of the stop mechanism for producing spiral sections of different lengths, and generally to improve  
25 the construction and operation of machines of this class.

The invention consists in certain novel features of construction and in the peculiar arrangement and combinations of parts hereinafter particularly described and claimed.

In the accompanying drawings like characters designate the same parts in the several figures.

35 Figure 1 is an elevation of the delivery side of a wire twisting and weaving machine embodying my invention. Fig. 2 is a cross-section of the same on the line 2 2, Fig. 1. Figs. 3, 4, 5, and 6 are detail views of the stop mechanism, Fig. 3 being a side elevation,  
40 Fig. 4 a horizontal section on the line 4 4, Fig. 3, Fig. 5 a cross-section on the line 5 5, Fig. 3, and Fig. 6 an inverted plan view of the adjustable trip-bar and parts immediately associated therewith.

45 *a a* are grooved feed-rollers mounted on parallel shafts *b b*, which are connected by similar gears *c c*, and *d* is a spirally-grooved twister or twisting-die, to which the wire is fed by the rollers *a* and by which it is twisted  
50 or formed into spirals, each spiral as it is delivered from the twister being engaged and interwoven with the next preceding spiral.

*e* is a pulley loosely mounted on one of the shafts *b*, and *f* is a clutch of any suitable construction for connecting said pulley with said shaft at will, as hereinafter explained. 55

The parts thus far mentioned are or may be like or similar to those of machines of this class as heretofore constructed.

*g* is a conical or tapering fork-collar movable endwise on the pulley-shaft for operating the clutch *f* and engaging and disengaging the pulley *e* and the shaft on which it is mounted to start and stop the feed-rollers *a*. 60

*h* is a longitudinally-movable rod supported by suitable bearings in the frame of the machine parallel with the roller-shafts *b*. It is provided with a fork-arm *i*, which loosely engages with the groove in the collar *g*, and it is also provided with a retracting-spring *j*, which tends to withdraw the collar *g* and to unlock or disengage the clutch *f*. *k* is an arm pivoted to said rod *h* and fixed on a transverse rocker-shaft *l*, which is located below it and provided at its opposite end with a horizontally-disposed latch-arm *m*. With this latch-arm is connected by a rod *n* an ordinary treadle or foot-lever, (not shown,) by means of which the operator is enabled to advance the rod *h* against the tension of spring *j* and to lock the clutch *f* and start the machine. The arm *k*, rocker-shaft *l*, and arm *m* constitute, in effect, a bell-crank lever. A latch *o* is mounted in the path of the arm *m* on a rocker-shaft *p*, which is parallel with the shaft *l*. On the shaft *p* is also fixed an upwardly-extending arm *q*, to which is attached a retracting-spring *r* and an operating-rod *s*, extending to the front end of the machine within easy reach of the operator. 90  
The latch *o* is constructed and arranged to engage with the free end of the arm *m* when the latter is depressed and to hold the rod *h* with the collar *g* advanced and the clutch *f* locked. The rod *s* affords means for manually disengaging the latch *o* from the arm *m*, and thereby releasing the clutch *f* to stop the machine. 95

*t* is a longitudinally-movable trip-bar loosely guided in a suitable way or bearings parallel with the rod *h*. *u u* are opposing friction-rollers arranged on opposite sides of said bar and connected by gears *v v*. One of said rollers is carried by a slide *w*, movable 100



toward and from the other roller, which is connected by a worm-gear  $x$  and a worm  $y$  with the shaft  $b$  of one of the feed-rollers. The bar  $t$  is provided with a projection  $z$ , in  
 5 whose path the free end of the latch  $o$  is located. A weight 2, connected by a cord passing over a sheave 3 with said bar, tends to return it to its initial position when it is released. An adjustable stop-screw 4, pro-  
 10 vided with a jam-nut 5 for locking it in place, limits the return movement of said bar and determines its initial position. The clutch-operating rod  $h$  is provided on one side with a leaf-spring 6, bent to engage with a beveled or inclined face on the slide  $w$  and to  
 15 force the roller  $u$ , which it carries, toward the opposing roller, thereby gripping or clamping the interposed bar  $t$  between them when the rod  $h$  is advanced to engage or lock the clutch  
 20  $f$  and start the machine.

My improved machine operates as follows: The stop-screw 4 being adjusted for any desired length of spirals and the end of the wire being passed between the rollers  $a$  and  
 25 through the twister  $d$ , the machine is set in motion by depressing the treadle, which throws the rod  $h$  forward, locking the clutch, clamping the friction-rollers  $u$  on the bar  $t$ , and engaging the arm  $m$  with the latch  $o$ .  
 30 The machine is thus set in operation and the trip-bar  $t$  is simultaneously started forward by the rotation of the friction-rollers  $u$ , which are geared with the feed-rollers  $a$ . When the projection  $z$  strikes the latch  $o$ , the latter  
 35 is thereby thrown against the tension of spring  $r$  out of engagement with the arm  $m$ . The spring  $j$  thereupon withdraws the rod  $h$  to its initial position, unlocking the clutch  $f$ , stopping the feed-rollers, and simultaneously  
 40 releasing the grip of the friction-rollers  $u$  on the bar  $t$ , which is thereupon withdrawn by the weight 2 to its initial position against the stop-screw 4. The wire being severed at and  
 45 started from exactly the same point every time the machine is stopped and set in operation, the successive spirals formed and delivered by the twister will terminate when the machine is automatically stopped by the bar  
 50  $t$  at exactly the same point, and when woven together the ends of the spirals or sections of wire will be even. Waste of material and loss of time and the labor and trouble of trimming the ends of the spirals to line with each other are thus avoided. The movement of the trip-  
 55 bar  $t$  by the rollers  $u$  corresponding with the movement of the feed-rollers  $a$ , it follows that for any given adjustment of the stop-screw 4 the feed-rollers will make the same number of revolutions for every advance of the stud  
 60 or projection  $z$  on said bar from its initial position to the point of tripping the latch  $o$ , so that starting from the same point successive spirals will terminate at exactly the same point or in line with each other when they  
 65 are interwoven.

By the adjustment of the stop-screw 4 to lengthen or shorten the movement of the bar

$t$  before it trips the latch  $o$  spirals of any desired length may be produced. The screw also affords means of accurate and fine ad- 70  
 justment.

To stop the machine before the latch  $o$  is tripped by the projection  $z$  on the bar  $t$ , as it is frequently necessary or desirable to do in the operation of a machine of this kind—as, 75  
 for instance, when the spiral being formed by the twister fails to properly engage or runs out of engagement with the preceding spiral—the operator has simply to thrust the rod  $s$  80  
 inward to disengage the latch  $o$  from the arm  $m$ , whereupon the clutch will be unlocked and the bar  $t$  will be released by the rollers  $u$  the same as when the latch is tripped by the normal operation of said bar  $t$ , as above explained. 85

Various changes in the details of construction and arrangement of parts may be made within the spirit and intended scope of the invention.

I claim— 90

1. In a wire twisting and weaving machine the combination with the feed-rollers, of stop mechanism comprising a longitudinally-movable trip-bar and friction-rollers geared with said feed-rollers and adapted to actuate said 95  
 bar, substantially as described.

2. In a wire twisting and weaving machine the combination with the feed-rollers, of stop mechanism comprising a longitudinally-movable trip bar, opposing friction-rollers geared 100  
 with said feed-rollers and adapted to actuate said bar, and an adjustable stop determining the initial position of said bar, substantially as described.

3. In a wire twisting and weaving machine 105  
 the combination with the feed-rollers, of automatic stop mechanism comprising a longitudinally-movable trip-bar, friction-rollers geared with said feed-rollers and adapted to actuate said bar in one direction synchro- 110  
 nously with the rotation of the feed-rollers, a stop for limiting the return movement of said bar and means for returning said bar, when released, to its initial position, substantially as described. 115

4. In a wire twisting and weaving machine the combination with the feed-rollers, of stop mechanism comprising a longitudinally-movable trip-bar, friction-rollers geared with said feed-rollers and adapted to move said bar 120  
 when gripped thereon in one direction, means for forcing said friction-rollers together on said bar when the machine is started and means for releasing their grip when the machine is stopped, substantially as described. 125

5. In a wire twisting and weaving machine the combination with twisting mechanism comprising feed-rollers, a driving connection and a clutch for engaging and disengaging the same, of a longitudinally-movable 130  
 bar adapted to disengage the clutch, and friction-rollers adapted to embrace and operate said bar, substantially as described.

6. In a wire twisting and weaving machine



the combination with twisting mechanism comprising feed-rollers and a suitable clutch for connecting the same with a driver, of a longitudinally-movable bar adapted at the limit of its movement in one direction to disengage the clutch, an adjustable stop for limiting the movement of said bar in the opposite direction, and friction-rollers arranged to embrace and operate said bar, substantially as described.

7. In a wire twisting and weaving machine the combination with twisting mechanism comprising feed-rollers, a driver, a clutch for engaging said rollers with the driver, and a latch for holding said clutch engaged with the driver, of a longitudinally-movable bar adapted at the limit of its movement in one direction to disengage said latch and release the clutch, and friction-rollers geared with the feed-rollers and adapted to actuate said bar, substantially as described.

8. In a wire-twisting machine the combination with twisting mechanism comprising feed-rollers, a driver, and a clutch for engaging said rollers with said driver, of a longitudinally-movable bar adapted at the limit of its movement in one direction to release the clutch, and friction-rollers geared with the feed-rollers and adapted to advance said bar, means for gripping said rollers on said bar when the clutch is engaged with the driver, means for releasing the grip of the rollers on said bar when the clutch is disengaged from the driver, and means for withdrawing said bar when it is released to its initial position, substantially as described.

9. In a wire-twisting machine the combination with twisting mechanism comprising feed-rollers, a suitable driver, and a clutch for connecting said rollers with the driver, of means under control of the operator for engaging and disengaging the clutch and driver, a longitudinally-movable bar for automatically releasing the clutch, and friction-rollers geared with the feed-rollers and adapted to engage and actuate said bar, substantially as described.

10. In a wire twisting and weaving machine the combination with twisting mechanism comprising feed-rollers, a suitable driver, a clutch for connecting said rollers with the driver, and a latch for holding the clutch engaged with the driver, of a longitudinally-movable bar for disengaging said latch, friction-rollers geared with the feed-rollers and adapted to actuate said bar, and a longitudinally-movable rod adapted to engage the clutch with the driver and said friction-rollers with said bar, substantially as described.

11. In a wire twisting and weaving machine the combination with twisting mechanism comprising feed-rollers, a suitable driver and a clutch for connecting said rollers with the driver, of friction-rollers geared with said feed-rollers, one of said friction-

rollers being movable toward and from the other, a longitudinally-movable rod adapted to engage said clutch with the driver and provided with a spring for pressing the movable friction-roller toward the other when the clutch is engaged with the driver, a latch for locking said rod in position to engage the clutch with the driver, means for retracting said rod to its initial position when it is released, and a longitudinally-movable bar passing between said friction-rollers and adapted to be actuated thereby when they are closed upon it to trip said latch, substantially as described.

12. In a wire twisting and weaving machine the combination with twisting mechanism comprising intergeared feed-rollers, a suitable driver, a clutch for connecting one of the roller-shafts with said driver, and a tapered fork-collar for engaging the clutch, of a longitudinally-movable rod provided with a fork engaging said collar, a lever for advancing said rod and engaging the clutch, a spring tending to retract said rod and disengage the clutch, a latch for holding said rod advanced and the clutch engaged against the tension of said spring, and means for automatically tripping said latch when the feed-rollers have made a certain number of revolutions, substantially as described.

13. In a wire twisting and weaving machine the combination with twisting mechanism comprising feed-rollers, a suitable driver and a clutch for connecting said driver and rollers, of a latch for holding said clutch engaged, a longitudinally-movable bar for tripping said latch and releasing the clutch, opposing intergeared friction-rollers on opposite sides of said bar, one of said rollers being movable toward and from the other, a worm on one of the feed-roller shafts meshing with a gear on one of the friction-roller shafts, means under the control of the operator for engaging the clutch and clamping the friction-rollers upon said bar, means for returning said bar when released to its initial position, an adjustable stop for limiting the return movement of said bar, and means for automatically releasing the grip of said friction-rollers on said bar when said clutch is disengaged, substantially as described.

14. In a wire twisting and weaving machine, the combination with twisting mechanism comprising feed-rollers, a suitable driver, and a clutch for connecting said rollers and driver, of a longitudinally-movable spring-retracted rod for operating said clutch, a lever for advancing said rod and engaging the clutch, a latch for locking said rod in its advanced position, a longitudinally-movable bar adapted by its advance movement to trip said latch, means for returning said bar when released to its initial position, an adjustable stop limiting the return movement of said bar, opposing friction-rollers arranged on opposite sides of said bar, one being geared



with one of the feed-rollers and one being  
movable toward and from said bar, and a  
spring on said rod arranged when it is ad-  
vanced for engaging the clutch to press the  
5 movable friction-roller toward the opposing  
roller and grip said bar between them, sub-  
stantially as described.

In witness whereof I hereto affix my signa-  
ture in presence of two witnesses.

CHAS. PFEIFFER.

Witnesses:

CHAS. L. GOSS,  
ALICE E. GOSS.