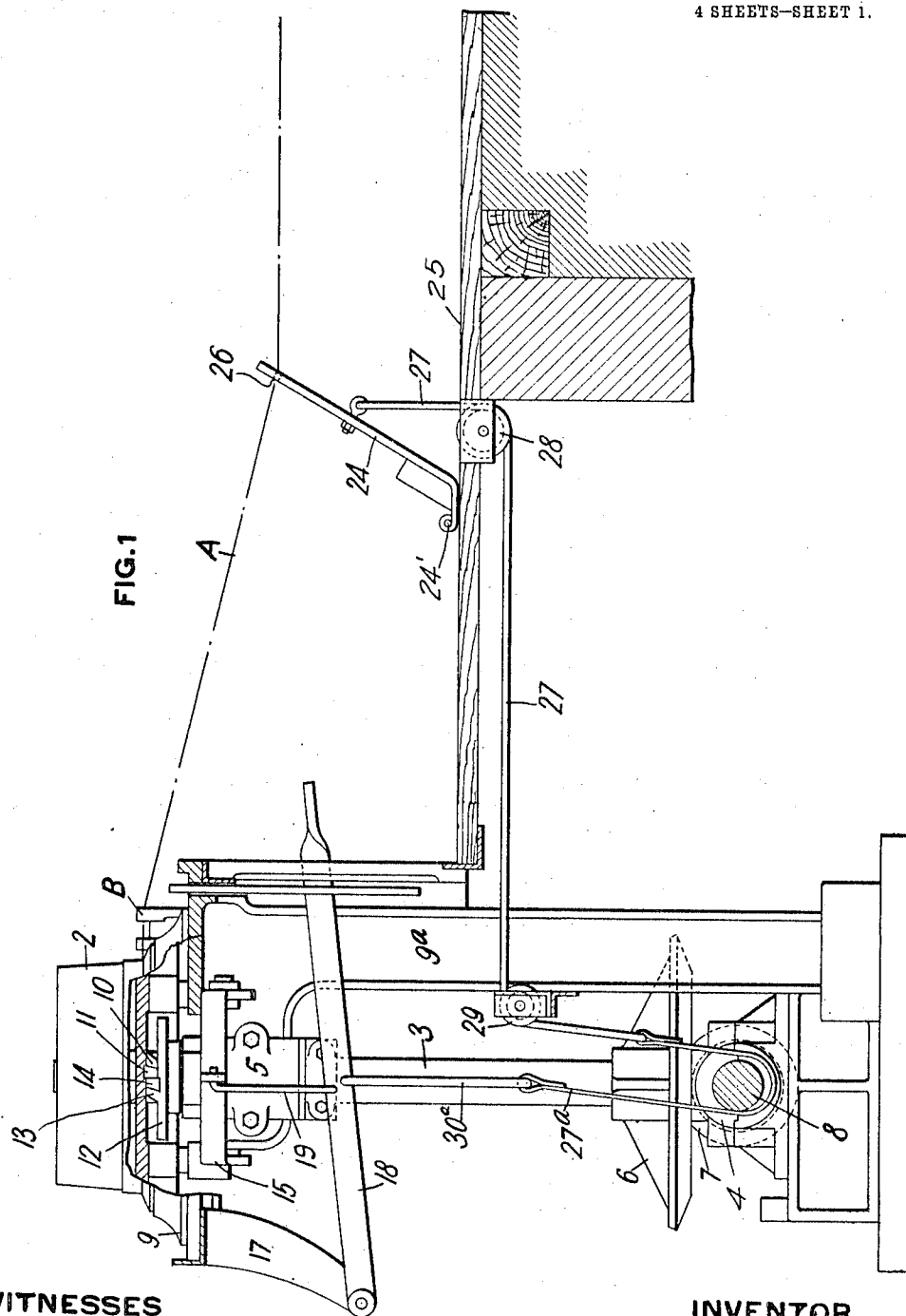


L. J. ALTENHOF.
SAFETY STOP FOR WIRE DRAWING BLOCKS.
APPLICATION FILED SEPT. 29, 1910.

1,048,268.

Patented Dec. 24, 1912.

4 SHEETS—SHEET 1.



WITNESSES

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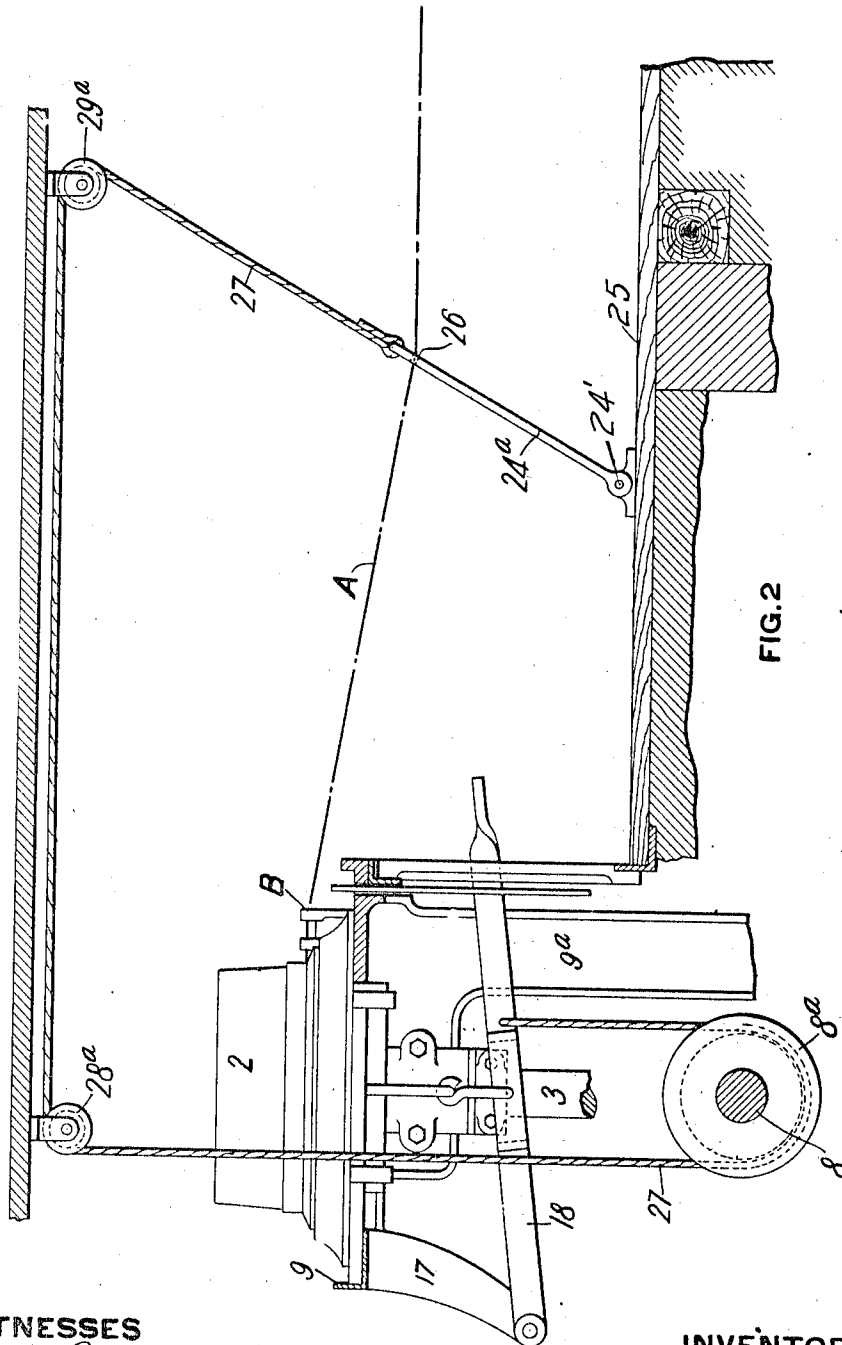


FIG. 2

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4 SHEETS—SHEET 4.

FIG. 5

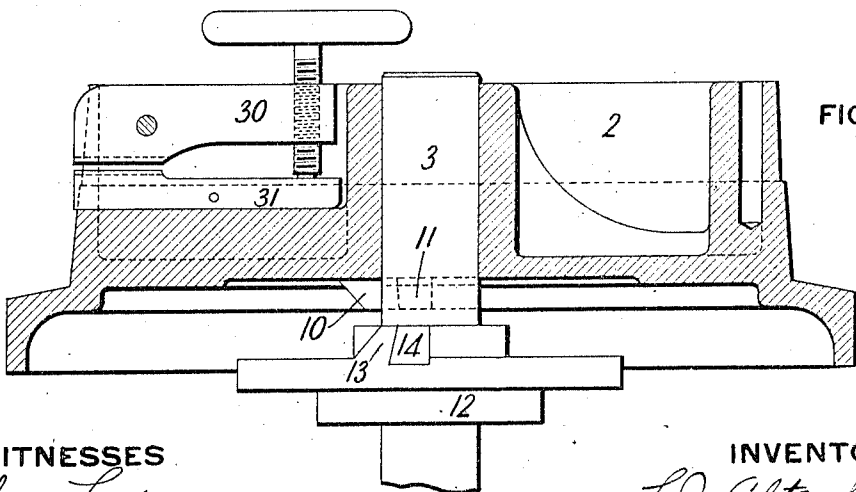
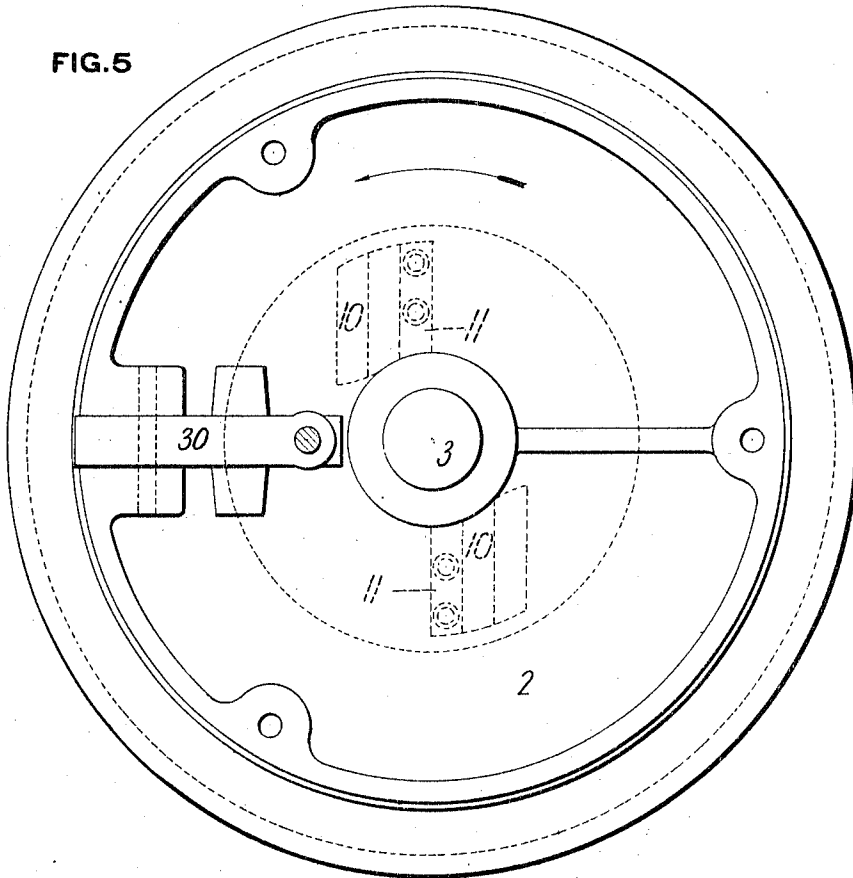


FIG. 6

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UNITED STATES PATENT OFFICE.

LOUIS J. ALTENHOF, OF DONORA, PENNSYLVANIA, ASSIGNOR TO THE AMERICAN STEEL & WIRE COMPANY OF NEW JERSEY, OF HOBOKEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SAFETY-STOP FOR WIRE-DRAWING BLOCKS.

1,048,268.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed September 29, 1910. Serial No. 584,519.

To all whom it may concern:

Be it known that I, LOUIS J. ALTENHOF, of Donora, in the county of Washington and State of Pennsylvania, have invented a new and useful Safety-Stop for Wire-Drawing Blocks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to apparatus employed in drawing wire and more particularly relates to the operation and control of the driving mechanism used in connection with such wire drawing apparatus.

One object of this invention is to provide improved means for automatically stopping the wire drawing blocks when the attendant accidentally is caught by the wire or the rod or wire being drawn becomes snarled or kinked during the drawing operations.

A further object of my invention is to provide improved means for mechanically actuating the clutch to detach the wire block or drum from the drum driving mechanism should the attendant be caught or when snarling or kinking of the rod or wire being drawn occurs.

A still further object of this invention is to provide an improved clutch detaching mechanism having frictional means for disengaging the clutch jaw and bringing the drawing block or drum to a standstill.

Referring to the drawings, Figure 1 is a sectional end elevation of a wire drawing bench having a wire drawing block or drum, (shown partly in section) and drum driving mechanism constructed and arranged in accordance with my invention. Fig. 2 is a sectional end elevation of a wire drawing bench having a modified form of clutch actuating mechanism also constructed and arranged in accordance with my invention. Fig. 3 is a sectional plan showing the connections between the drum lifting yoke and the treadle or foot lever for manually stopping the rotation of the drum. Fig. 4 is a side elevation of the drawing bench, the drum and bench being partly broken away to show the connections between the drum lifting yoke and the drum. Fig. 5 is a top plan and Fig. 6 a sectional elevation on a larger scale showing the construction of the drum and clutch forming part of the apparatus.

In the drawings, 2 designates a wire draw-

ing block or drum which in the construction shown is loosely mounted upon a vertical driving spindle 3. The spindle 3 is mounted in a step bearing 4 and its upper end is rotatably secured in the bearing 5, this spindle being driven through the bevel gear 6 which meshes with a bevel pinion 7 on the jack shaft 8. The jack shaft 8, which is arranged to drive a series of the drums 2, is mounted in suitable bearings beneath and extends lengthwise of the wire drawing bench 9 which is secured upon and supported by the standards 9'. The winding drum 2 is provided upon its bottom face with downwardly extending projections or lugs 10 which are faced with hardened inserts or wearing strips 11 forming one set of the jaws of the driving clutch by means of which the drum is positively rotated. Also secured on the vertically extending spindle 3 so as to be rotated therewith is a disk or flange 12 having upwardly extending lugs or projections 13 similarly constructed to those on the bottom face of the drum 2, the lugs 13 also being faced with hardened inserts or wearing strips 14 which are arranged to contact with the strips 11 on the drum in rotating the drum. In the construction shown, the disk 12 is keyed or otherwise secured to the spindle 3 so as to be rotated by this spindle.

Pivoted to the framework of the drawing bench 9 is a yoked lever 15 having its forked ends connected to vertically extending rods or bars 16, the upper ends of which engage with the bottom surface of the drum 2 in lifting the drum to disengage the clutch jaws 11 and 14 forming the clutch, and hold the drum stationary against rotation. Pivoted by one end to a bracket or arm 17 on the drawing bench 9 is a foot lever or treadle 18 which is connected at an intermediate point in its length by a link 19 to one end of the pivoted yoke lever 15. The outer end of the yoke 15 is provided with a counterweight 20 which serves to lower the counterweight end of the yoke 15 and, through the connecting mechanism, lift the forward end of the foot lever 18. The end of the lever 18 projects beyond the drawing bench 9 in position to be depressed by the foot of the operator when it is desired to bring the drum 2 to rest. The foot lever 18 projects through a slot 21 having a wide portion 22

at its lower end and a spring 23 is secured to the foot lever 18 so as to exert a force tending to pull the lever 18 sidewise when opposite the wide portion 22 of the slot.

5 In the operation of drawing wire the coils being drawn frequently become snarled or kinked and, unless the drum is quickly disengaged from the driving mechanism and stopped, the wire or rods will break, or serious damage to the apparatus may occur while the drawing operations are delayed. It may also happen that the workman attending to the machine may be caught by the wire and injured unless the machine is quickly stopped. It is desired to prevent injury to workmen and delays and breakage of the wire or rods or damage to the apparatus, and for this purpose I have provided a safety stop mechanism in which one end of the lever 24 is pivoted at 24' in a suitable location, to the floor 25.

The upper end of the lever 24 is provided with a recess or opening 26 through which the wire or rod being drawn passes on its way from the coil to the winding drum 2. One end of a flexible connection 27 is secured to the lever 24, this connection passing around the idler sheave wheels 28 and 29 and around the jack shaft 8 by which the drawing blocks or drums are rotated. The other end of the flexible connection 27 is secured by means of a link 30^a to the foot lever 18 for a purpose described later. Preferably the connection 27 is provided with a flexible flat portion 27^a which contacts with the jack shaft 8, although when desired, a sheave wheel 8^a may be provided on the jack shaft, as shown in Fig. 2.

10 In the construction shown in Fig. 2 the flexible connection 27 is led upwardly above the winding drum, and, passing over the sheave wheels 28^a, 29^a, is then led downwardly and around the sheave wheel 8^a, which is keyed or otherwise secured to the jack shaft for that purpose, its other end being secured to the foot lever 18, as before described.

In the operation of drawing wire by means of my improved apparatus the foot lever 18 is placed in the position shown in the drawing, when the clutch jaws will be in engagement and the drum 2 positively rotated through the spindle 3 and connecting gearing by the jack shaft 8. The end of the wire or rod to be drawn is passed through the opening 26 in the pivoted levers 24 or 24^a and the end of the rod or wire A after having been pointed in the usual manner, is inserted in one of the openings in the die block B and is then caused to be gripped by the jaws 30, 31 of the rod gripping mechanism shown in Figs. 5 and 6. The wire is then pulled through the die block and reduced in the usual manner by the rotation of the drum 2.

Should, as is frequently the case, a snarl or kink occur in the length of the wire being drawn, when such kink reaches the pivoted lever 24 or 24^a the snarl or tangle will not pass through the relatively small opening or slot 26 in this arm 24 and the pulling action of the drum 2 upon the wire A will move the free end of the lever 24. When this occurs the flexible connection 27 will be moved so as to bring a portion of this connection into frictional engagement with the rotating jack shaft 8. The frictional engagement of the jack shaft with the flexible connection causes the lever 24 to depress the outer or free end of the foot lever 18 and through the connecting mechanism moves the yoke 15 so as to lift the drum 2 on its spindle 3 a distance sufficient to disengage the clutch jaws 11 and 14. Should the attendant be caught by the wire and pulled by it against the lever 24, the same action will, of course, take place as in the case of a snarl or kink, and thus the workman is protected from possible serious or fatal injury. This operation being performed mechanically is entirely automatic and takes place much more quickly than it could be performed by manually disengaging the clutch through the foot lever 18. The foot lever 18 then enters and engages with the offset formed by the widened portion of the slot 22 so as to hold the lever 18 in its depressed position and maintain the drum in its disengaged position, the lever being moved sidewise by the spring 23 or by the operator. The snarl or kink or other obstruction is then removed and the foot lever is released and is permitted to lift through the action of the counter-weight 20 so as to again bring the clutch jaws on the drum into engagement, start the drum in rotation and cause the wire drawing operation to be continued.

When for any reason it is desired to stop the operation of the drum, the operator will tread upon the outer end of the lever or treadle 18 and cause it to engage with the stop formed by the widened portion of the slot 22, where it will remain until such time as released by the operator.

In some cases the wire on the drum breaks causing the end to fly about as the drum revolves, and in going to the foot lever to stop the drum the operator is liable to be struck by the flying end, causing injury to his eyes or other part of his body with which it comes in contact. With my improved apparatus the operator can grasp the lever 24 and shut off the power at a safe distance.

With the overhead construction shown in Fig. 2, if the operator should be caught and carried around the block, his body striking the flexible connection 27 will tighten the friction mechanism, shutting down the drum.

automatically, thus preventing injuries which might result, should the drum be not promptly stopped.

The advantages of my invention will be apparent to those skilled in the art. By the use of the stop shown the winding drum is mechanically caused to disengage the drum from the driving spindle 3, when a snarl or kink occurs in the wire being operated upon, or when the workman is caught by the wire. The clutch operating mechanism frictionally engages with the constantly rotating jack shaft and in this way utilizes power imparted by this jack shaft to disengage the drum from the driving mechanism. The apparatus is simple and is easily kept in repair.

Modifications in the construction and arrangement of the parts may be made without departing from my invention as set forth in the appended claims.

I claim:—

1. A wire drawing bench having a winding drum, a drum spindle, means detachably connecting the drum and spindle, a jack shaft for driving the spindle detaching mechanism, engaging with said jack shaft in disconnecting the detachable means connecting the drum and spindle, and means operatively connected with the wire or rod being drawn arranged to hold the detaching mechanism in frictional engagement with the shaft and disengage the clutch jaws when actuated by said wire or rod.

2. A wire drawing bench having a winding drum, a drum spindle, said drum and spindle having co-acting jaw members forming a clutch detachably connecting the drum and spindle, a pivoted lever arm operatively engaged by said rod or wire, said arm having an opening therein through which the rod or wire is passed and connections between the drum and pivoted lever arm arranged to disengage the clutch jaws when the arm is moved by said wire or rod.

3. A wire drawing bench having a winding drum, a drum driving spindle, co-acting jaw members on said drum and spindle forming a clutch detachably connecting the drum and spindle, a jack shaft for driving the spindle, frictional clutch disengaging mechanism engaging with the jack shaft

and arranged to lift the drum to disengage the clutch jaws, a pivoted lever operatively connected to the rod or wire being drawn and arranged to be actuated by an obstruction in said wire or rod, and connections between the lever and clutch disengaging mechanism arranged to hold the clutch disengaging mechanism in frictional engagement with the jack shaft in disengaging the clutch jaws and holding the drum in lifted position.

4. A wire drawing bench having a winding drum, drum driving mechanism therefor, said drum and drum driving mechanism having co-acting jaw members co-acting to form a clutch, a clutch detaching mechanism, a pivoted arm operatively engaged by the wire being drawn, and connections between said arm and clutch detaching mechanism for holding said connections in operative engagement with the drum driving mechanism when the pivoted arm is moved by the wire being drawn to detach said drum and drum driving mechanism.

5. The combination with a wire winding drum of a spindle, said spindle and drum having jaws thereon co-acting to form a clutch mechanism connecting the drum and spindle, means for operating the spindle, means for disengaging the clutch jaws and means operatively engaged by the wire or rod being drawn for automatically operating said clutch mechanism to detach the clutch jaws and release the drum from the spindle.

6. The combination with a wire winding drum of a spindle, jaw members on said drum and spindle forming a clutch mechanism detachably connecting the drum and spindle, means for rotating the spindle and movable means operatively connected to and actuated by the wire or rod being drawn for automatically operating said clutch mechanism to disengage the clutch jaws and release the drum from the spindle.

In testimony whereof, I have hereunto set my hand.

LOUIS J. ALTENHOF.

Witnesses:

D. S. BEYER,
H. A. SCHULTZ.