E. G. STRAUB.

PIPE POLISHING MACHINE.

APPLICATION FILED MAY 22, 1917.

1,256,276.

Patented Feb. 12, 1918.

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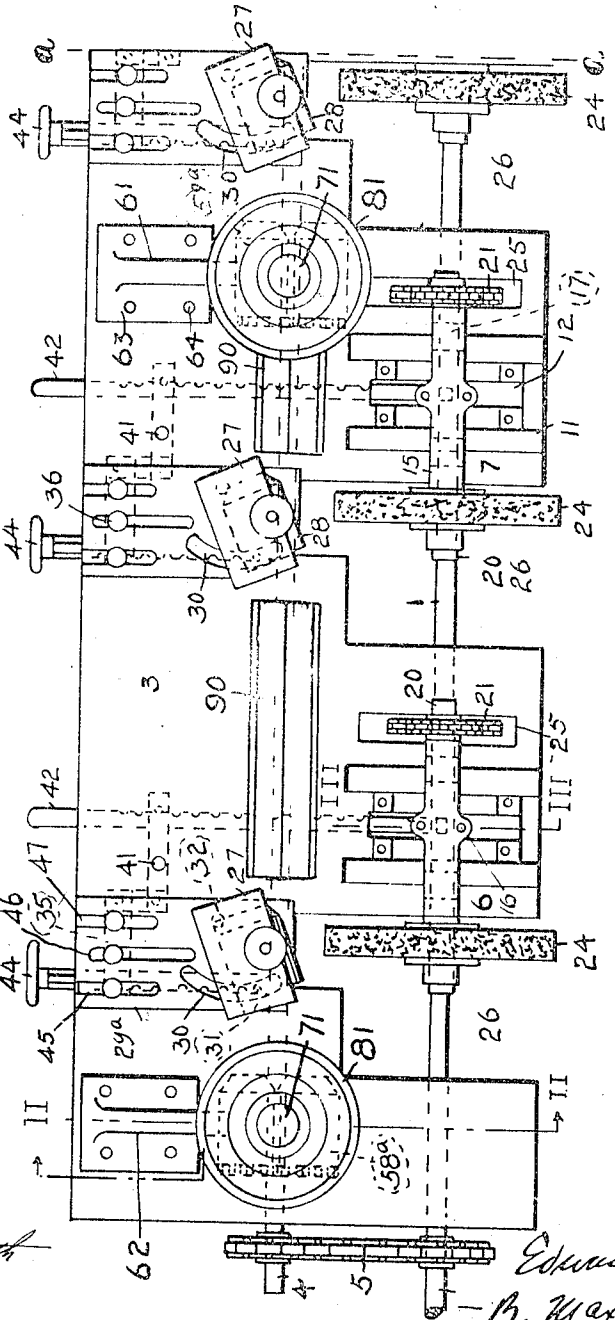


Fig. 1

WITNESS

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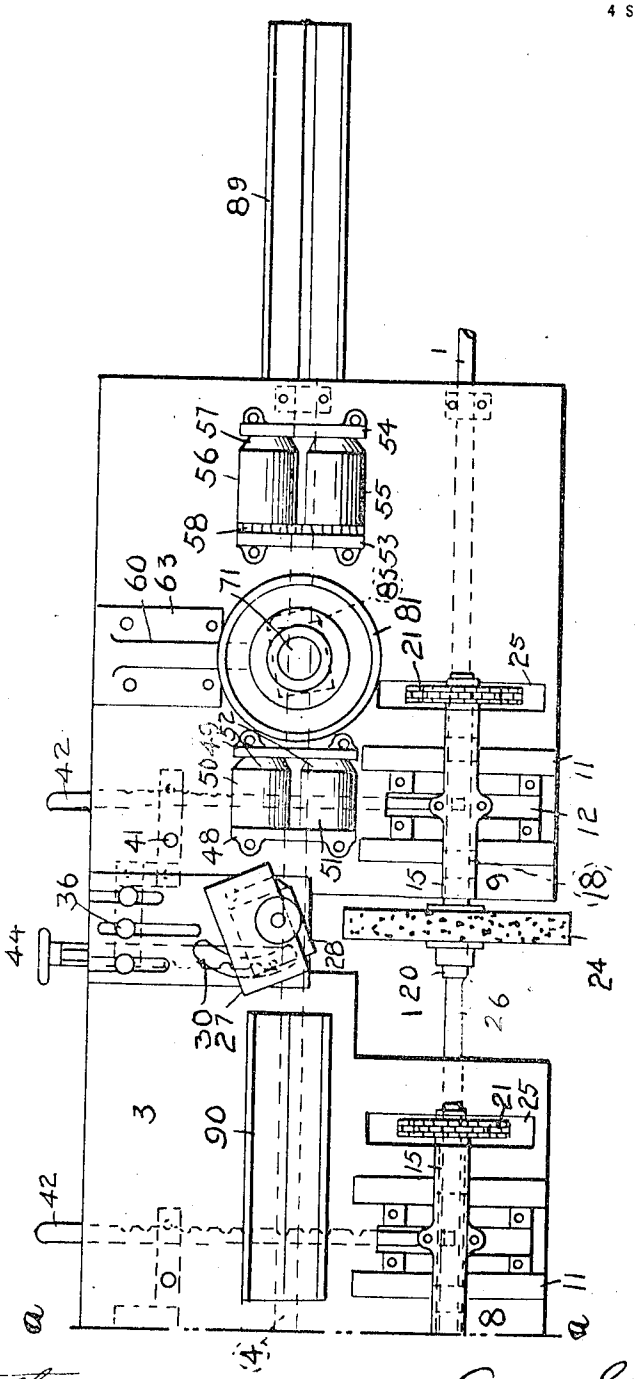


Fig. 1a

WITNESS

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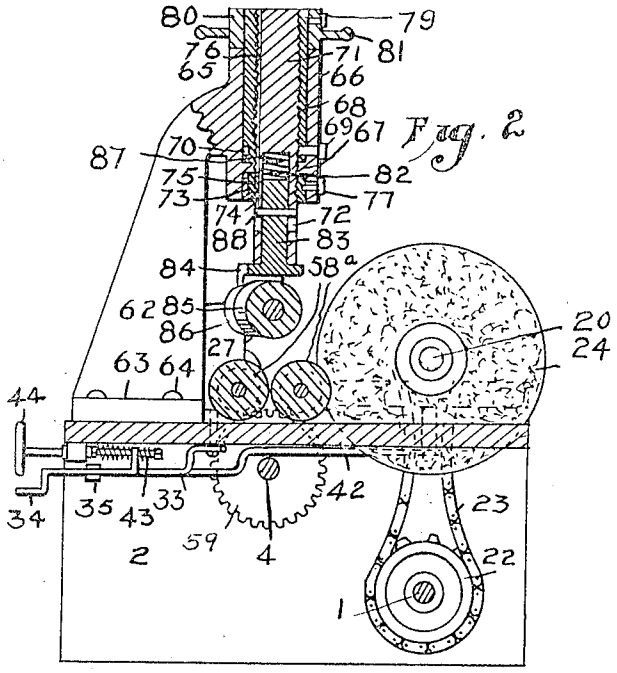
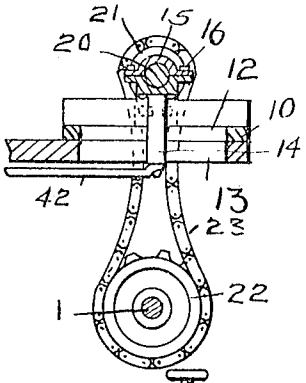


Fig. 2

Fig. 3



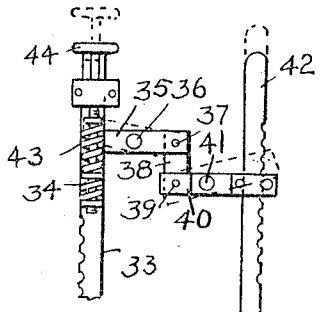
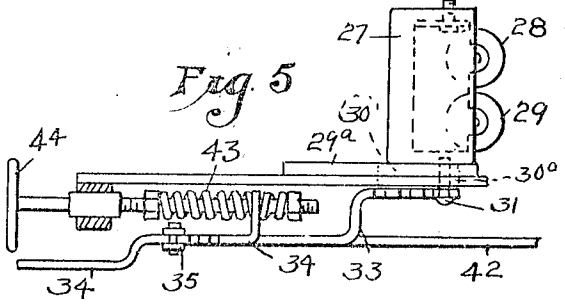
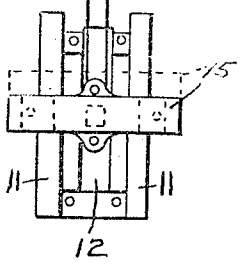


Fig. 4

Fig. 5





WITNESS

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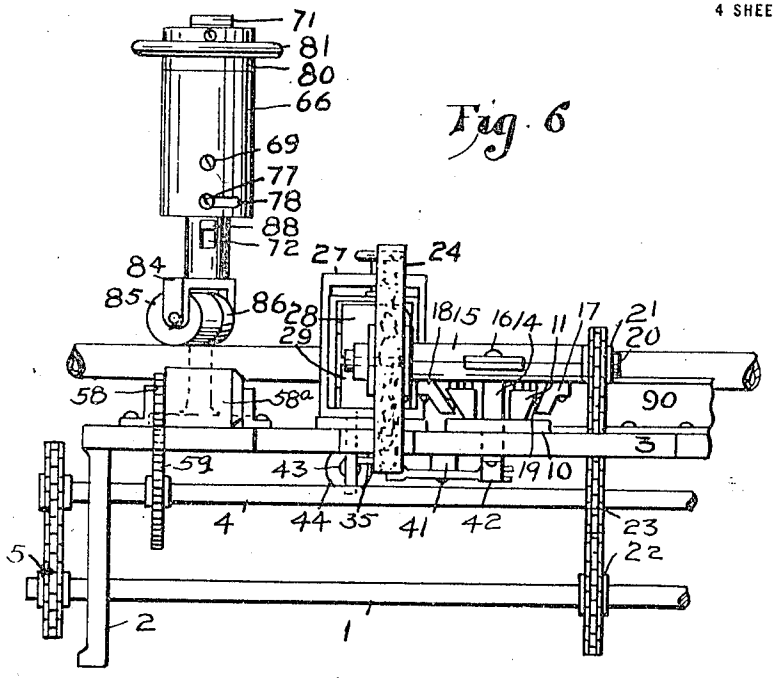


Fig. 6

Fig. 7

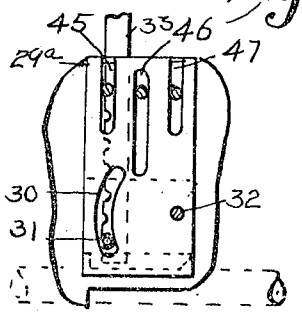
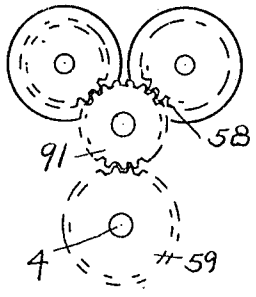


Fig 8



WITNESS

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UNITED STATES PATENT OFFICE.

EDWARD GLENN STRAUB, OF BEAVER FALLS, PENNSYLVANIA.

PIPE-POLISHING MACHINE.

1,256,276. Specification of Letters Patent. Patented Feb. 12, 1918.

Application filed May 22, 1917. Serial No. 170,200.

To all whom it may concern:

Be it known that I, EDWARD GLENN STRAUB, a citizen of the United States of America, residing at Beaver Falls, county of Beaver, and State of Pennsylvania, have invented new and useful Improvements in Pipe-Polishing Machines, of which the following is a specification.

This invention relates to pipe polishing machines and has for its object to provide a machine of such class, in a manner as hereinafter set forth, whereby the polishing mechanisms are automatically shifted to operative position by the pipe during its travel.

A further object of the invention is to provide a pipe polishing machine, in a manner as hereinafter set forth, having means whereby the pipe is caused to travel at a great speed over the machine, under such conditions increasing the output, as well as reducing the cost of production.

Further objects of the invention are to provide a pipe polishing machine, having provisions, for the continuous feed of the pipe whereby a saving in production over the method now in use is had.

Further objects of the invention are to provide a pipe polishing machine which is simple in its construction and arrangement, strong, durable, efficient and convenient in its use, and comparatively inexpensive to set up.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figures 1 and 1A, when taken together, denote a top plan view of a pipe polishing machine in accordance with this invention.

Fig. 2 is a section on line II—II, Fig. 1.

Fig. 3 is a section on line III—III, Fig. 1.

Fig. 4 is a top plan view of the shifting mechanism for the polishing machine.

Fig. 5 is a side elevation of said mechanism.

Fig. 6 is a side elevation of a portion of a machine illustrating a polishing mechanism and a shifting mechanism therefor.

Fig. 7 is a top plan view, illustrating a detail of the shifting mechanism for the polishing machine.

Fig. 8 illustrates a modified form of drive.

Referring to Figs. 1 to 7 of the drawings the machine comprises a main operating shaft 1, driven at its forward end by a prime mover, not shown. Suitable supports, as at 2, are provided for the shaft 1. The latter is mounted near the bottoms of said supports which carry a bed plate 3.

The machine further includes an auxiliary operating shaft 4, which is mounted in the supports 2, and arranged in close proximity to the bed plate 3, but out of alinement with the shaft 1. The rear ends of the shafts 1, 4, are operatively connected together as at 5, whereby the shaft 4 will be driven from the shaft 1.

The shaft 1 is not only employed for driving the shaft 4, but also for operating a set of polishing mechanisms to be hereinafter referred to.

The shaft 4 is employed for operating sets of pipe feed rolls which will be presently described.

As illustrated the machine is shown as including a set of four polishing mechanisms as indicated at 6, 7, 8, and 9, and as each of these mechanisms is similar in construction, with the exception of a different grade or degree of emery or polishing wheel, the coarser of the wheels first acting on the pipe, but one will be described, as the description of one will apply to all.

Each polishing mechanism, best shown in Fig. 6, consists of a plate 10, secured to the bed plate 3 and which has its upper face provided with a pair of spaced triangular bars 11, extending transversely with respect to the bed plate 3. The plate 10 and the bed plate 3, is slotted as at 12, 13, respectively and which slots aline. Extending down through the slots 12, 13, is a vertical supporting arm 14, having its upper end fixed to the lower section of a sectional shaft bearing 15, which is formed of two sections detachably secured together, as at 16.

Depending from the lower section of the bearing 15, is a pair of guide arms 17, 18, which have their inner faces beveled and disposed in opposite directions with respect to each other. The guide arms 17, 18, op-

pose and are spaced from the bars 11. Roller bearings are interposed between the bars 11 and the guide arms and lower section of the bearing 15.

Journaled in the bearings 15, is a shaft 20, provided at one end with a sprocket wheel 21, operatively connected with a sprocket wheel 22, on the shaft 1, by a chain 23. The shaft 20 at its lower end has a polishing or emery wheel 24. The bed plate 3, is cut away at 25, to provide a clearance for the operation of the wheel 21 and chain 23, and is also cut away as at 26 to provide a clearance for the operation of the wheel 24.

The bearing 15 is slidably mounted, due to the manner of setting up the bars 11, arms 17 and 18, and roller bearings 19, and which permit the bearings 15, when the arm 14 is actuated, to be shifted inwardly and outwardly, with respect to the bed plate when occasion so requires.

The bearing 15 is automatically shifted during the travel of the pipe, owing to a shifting mechanism therefor which is actuated by the pipe during its travel, and such shifting mechanism will now be referred to.

Arranged opposite the wheel 24, is a housing 27, having journaled therein an adjustable upper and a lower roll 28, 29 respectively and each of which has its forward end beveled. The rolls 28, 29, project out of the housing 27.

The housing 27 normally is disposed at an inclination and is shifted by the pipe during its travel to a position parallel to the polishing wheel 24, and when said housing 27 is shifted to such position, the bearing 15, is also shifted in a direction whereby the polishing wheel is moved against the pipe for the purpose of polishing it. The polishing wheel is maintained in active position until the pipe clears the rolls 28, 29.

Mounted on the bed plate 3, is an adjustable supporting plate 29^a, having an arcuate slot 30 through which projects a coupling pin 31, depending from the bottom of the housing 27. The supporting plate 29^a is furthermore provided with an opening, through which extends a pivot pin 32, for and which depends from the housing 27. By this arrangement, with reference to Fig. 1, when the pipe travels against the rolls 28, 29, it will shift the housing 27 to a position parallel to the wheel 24 and maintain it in such position.

The bed plate 3 has a wide rectangular slot 30^a alining with the slot 30, and also has an opening for the pin 32.

Arranged below the bed plate 3, and attached to the pin 31, is a spring controlled shiftable angle-shaped member 33, slidably connected to a spring controlled bar 34. Attached to the member 33 is a pivoted lever 35, which extends at right angles to the member 33. The pivot of the lever 35 is indicated at 36. Pivotally connected to the lever 35, as at 37, is a link 38, which is pivotally attached as at 39, to a shifting lever 40. The latter is pivoted as at 41, and connected to a shifting bar 42, secured to the supporting arm 14.

Means for adjusting the tension of the springs 43, which controls the member 33 and bar 34, is indicated at 44.

Slots 45, 46, and 47 are provided in the bed plate 3, and supporting plate 29^a, to enable the adjustment of the supporting plate 29^a and the other elements of the shifting mechanism when occasion so requires.

The function of the springs 43 is to return the housing 27, when the pipe has passed or cleared the housing, to normal position, which is at an inclination with respect to the polishing wheel, as illustrated in Fig. 1.

The elements 33 and 42 are toothed so that they can be set and maintained in adjusted position.

Arranged upon the bed plate 3 opposite the support for the bearing 15 of the shifting mechanism 9, are uprights 48, 49, in which is journaled a pair of longitudinally disposed idler rolls 50, 51, each having its forward end beveled as at 52.

Arranged at the forward end of the bed plate 3 is a pair of supports 53, 54, in which is journaled a set of longitudinally disposed feed rolls 55, 56, each having its forward end beveled as at 57, and its rear end provided with a gear 58.

A set of feed rolls, indicated at 57^a, similar in construction and arrangement as the feed rolls 55, 56, are mounted upon the bed plate 3, opposite the sprocket wheel 21, of the polishing mechanism 7. Arranged upon the bed plate 3, rearwardly with respect to the shifting mechanism for the polishing mechanism 6, is a set of feed rolls, indicated at 58^a, and similar in construction as the rolls 55, 56.

The shaft 4 is provided with series of spaced gear wheels 59, one of which meshes with the gears of the rolls 55, 56, for driving said rolls; another meshes with the gears of the rolls 57^a for driving them, and the other of which meshes with the gears of the rolls 58^a for driving them. When the shaft 4 is operated all the sets of pipe feed rolls are simultaneously operated.

Mounted on the bed plate 3 are three spaced upright angle brackets 60, 61, 62, each provided at its lower end with a flange 63, through which extend securing devices 64 for fixedly connecting the bracket to the bed plate 3.

Each of said brackets has formed integral with its horizontal arm 65, a vertically disposed sleeve 66, having its face provided with an annular flange 67, having mounted thereon an interiorly threaded rotatable

sleeve 68, which is maintained from vertical movement by a stud 69, secured to the sleeve 66 and extending into an annular peripheral groove formed in the sleeve 68.

Extending down through the sleeve 68, is a peripherally threaded and vertically adjustable spindle 71, having threaded engagement with and adjusted by the sleeve 68. The spindle 71 depends below the sleeve 66 and is formed with a pair of diametrically opposed rectangular openings 72.

Abutting against the lower face of the flange 67, is a collar 73, which surrounds the spindle 71 and has its lower end flush with the lower end of the sleeve 66. The collar 73 has its inner face provided with a vertically disposed groove 74, in which a key 75 is seated. The spindle 71 has a vertical groove 76, opposing the groove 74, and into which extends the key 75, whereby the spindle 71 is coupled with the collar 73, to prevent said spindle turning relatively to the collar 73.

The spindle 71 is adjusted on its vertical axis for a purpose to be presently referred to, and it is maintained in adjusted position by a headed set screw 77, which has its inner end secured in the collar 73, and its shank extending through an oval shaped slot 78, formed in the sleeve 66, near its lower end.

The sleeve 68 projects above the upper end of the sleeve 66 and has fixed therewith, by a clamping screw 79, the hub 80 of a hand wheel 81, the latter providing means for turning the sleeve 68 to cause a vertical adjustment of the spindle 71.

The lower end of the spindle 71 is hollow as at 82, and extending therein is the shank 83, of an inverted yoke 84, in which is journaled a combined feeding and holding down roll 85, the latter having its forward end beveled as at 86. Arranged in the spindle 71 and bearing against the upper end of the shank 83, is a coiled cushioning spring 87 which controls and cushions the upward movement of the shank 83, which is slidably connected to the spindle 71, by a pin 88 which extends into the openings 72. The top and bottom walls of said opening limit the upward and downward movement of the shank.

One of the holding down rolls 85 is arranged at a point between the idler rolls 50, 51, and the feed rolls 55, 56; another of the holding down rolls 85 is arranged over the feed rolls 57^a, and the other is arranged over the feed rolls 58^a.

The adjustment of the spindle 71 on its vertical axis is for the purpose of positioning the yoke 84, at an inclination, which maintains the holding down roll in a like position.

The reference character 89 denotes a trough for the pipe as fed to the machine, and extending from the feed rolls 51^a and 58 to a point in proximity to a housing 27 of the shifting mechanism for a polishing mechanism is a pipe trough 90.

In Fig. 8 of the drawings a means is set up for driving the feed rolls in a different direction from the drive in Fig. 1. The said means consists in having each of the gear wheels 59, mesh with a smaller gear 91, which in turn meshes with the gears of the feed rolls.

The pipe is revolved at a certain number of revolutions by the feed rolls, and as the pipe contacts with the beveled inclined holding down rolls revolving them the pipe is fed at the same time. The more the holding down rolls are revolved the faster the pipe is fed through the machine, without changing the number of revolutions of the pipe.

By adjusting the spindles 71 the holding down rolls can be adjusted to correspond to different diameters of pipe.

On the starting end of the machine the pipe is forced under the first holding down rolls, and it then passes on top of the two idler rolls. If there are any small crooks in the pipe they will be straightened out while passing under the first holding down roll.

The pipe then passes on and comes in contact with the first two adjustable rolls that are held in the first housing 27.

Turning a handle on the top of the housing the rolls are moved either up or down, so that the center between the two rolls corresponds to the center of the pipe that is polishing.

As the pipe is traveling forward it will clear the ends of the rolls 28, 29, and come in contact with the face of the rolls and turn the other ends of the rolls forward, and as the pipe travels across the rolls, the housing is forced backward causing the bearing which carries the spindle to which the polishing wheel is fastened to move forward and bring the polishing wheel in contact with the pipe.

The amount of pressure that is placed against the pipe by the rolls 28, 29, is regulated by the means on the outside of the machine. When this means is adjusted it tightens or loosens the spring causing the pressure to be changed. The starting end of the pipe as it travels past these rolls, enters under the next beveled top roll, and then past the next rolls 28, 29, and so on until it is through the machine. As the other end of the pipe travels past the two rolls 28, 29, which draws the polishing wheel into contact with the pipe, the end of the housing farthest from the starting end of the machine is caused to move forward by the spring under the machine, and as this end of the housing moves forward the bearing end of the wheel is caused to move back away from the pipe so that the next piece of

pipe as it travels forward will strike the edge of the rolls, and when this piece of pipe passes on to these rolls which are contained in the housing, the wheel is again drawn into contact with the pipe, and so on one piece after the other.

The features of this machine are the beveled top roll with the spring arrangement which forms the continuous and automatic feeding of the pipe, and the rolls that are contained in the housing, and which are fastened to the spring arrangement and to the double acting leverage which is placed under the base of the machine which causes the pipe to be automatically ground or polished.

What I claim is:

1. A pipe polishing machine comprising shifting polishing mechanisms, and means operated by and maintained in position by contact of the pipe during the travel thereof for shifting and holding said mechanisms in active position against the pipe.

2. A pipe polishing machine comprising polishing mechanisms, and means whereby said mechanisms are successively shifted into active position against the pipe by the pipe.

3. A pipe polishing machine comprising polishing mechanisms, and means whereby said mechanisms are successively shifted into active position against the pipe by the pipe, and means for simultaneously operating said mechanisms prior to and when shifted.

4. A pipe polishing machine comprising polishing mechanisms, and means whereby said mechanisms are successively shifted into active position against the pipe by the pipe, sets of pipe feed rolls, and inclined and rotatable combined pipe holding down and feed elements associating with said feed rolls.

5. A pipe polishing machine comprising polishing mechanisms, and means whereby said mechanisms are successively shifted into active position against the pipe by the pipe, sets of pipe feed rolls, and inclined and rotatable combined pipe holding down and feed elements associating with said feed rolls, and means for angularly and vertically adjusting said elements.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

EDWARD GLENN STRAUB.

Witnesses:

MAX H. SROLOVITZ,

ELLA J. LETZKUS.