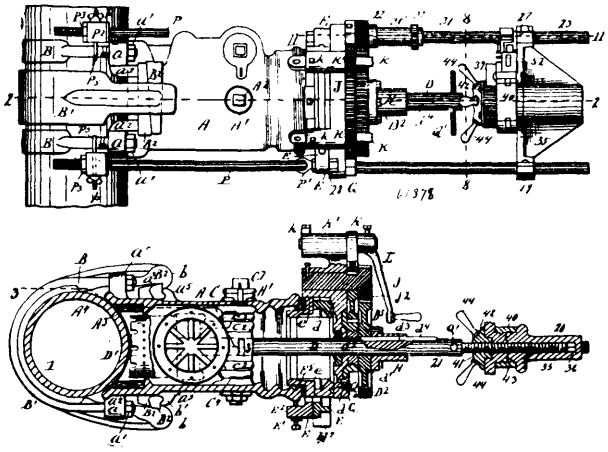
combination of a sleeve, a shut-off valve to seat within said sleeve, a hinge pin, and connecting arms engaging said valve



with said hinge pin, said hinge pin and sleeve formed with a by-pass to open on both sides of the valve seat, substantially as described. 5th. The combination of a sleeve, a shut-off valve to seat within said sleeve, a hinge pin pivoted with arms connecting the valve therewith, and recessed caps engaged upon the hinge pin, said hinge pin and sleeve having registrable ports to form a by-pass to open on both sides of the valve seat, and said connecting arms having a limited movement in the recesses of said caps to cause said passages to register before the valve is actuated, substantially as described. 6th. The combination of a sleeve permanently engagable upon a water pipe, a swinging shut-off valve to seat within said sleeve, a by-pass to open upon both sides of the valve seat, and means to automatically open and close said by-pass upon the actuation of said shut-off valve, substantially as described. 7th. The combination of a sleeve permanently engagable upon a water pipe, a hinge pin journalled in said sleeve, a swinging shut-off valve connected with said hinge pin to seat within the sleeve, a by-pass to open upon both sides of the valve seat, and means actuated by the movement of the hinge pin to open and close said by-pass, substantially as described. 8th. The combination of a sleeve permanently engagable upon a water pipe, a hinge pin journalled in said sleeve, a swinging shut-off valve carried by said hinge pin to seat within the sleeve, a by-pass to open upon both sides of the valve seat, and means actuated by the movement of the hinge pin to open and close said by-pass, said hinge pin having a limited movement to open said by-pass before opening the shut-off valve, substantially as described. 9th. The combination with a sleeve engagable upon a water pipe, and means to secure the sleeve upon said pipe, said means consisting of wrought metal bands, and a supplement cast metal yoke, said bands and yoke constructed to pass about the pipe and to be engaged with said sleeve, for the purpose described. 10th. The combination of a pipe, a sleeve engagable upon the pipe, a compressible packing between the sleeve and pipe, means to engage the sleeve upon the pipe and to compress said packing therebetween, and a lead packing on the sides and edges of the compressible packing, substantially as described. 11th. The combination of a sleeve, means to secure the sleeve upon a pipe, and a supporting plate held in place between said means and the pipe, substantially as described. 12th. The combination of a sleeve engagable upon a water pipe, means to engage the sleeve upon said pipe, an additional supplemental yoke to encircle a water pipe and engagable with the sleeve to assist in holding the sleeve upon the pipe, and wedges to hold the yoke and sleeve firmly together, substantially as described. 13th. The combination of a sleeve constructed with hook lugs a^5, a yoke engagable therewith to secure the sleeve upon a water pipe, and wedges to hold the yoke and sleeve firmly together upon the pipe, the outer wedges formed with a lip b^1 to engage said hook lugs to prevent a lifting action as the wedges are driven into place, substantially as described. 14th. The combination of a sleeve, a hinge pin journalled therein, a swinging shut-off valve, arms connecting said shut-off valve with the hinge pin, and arms caps encircling the hinge pin and rotatable with the hinge pin, and a by-pass, said caps recessed on their peripheries to permit the hinge pin being rotated the length of said recesses before actuating the shut-off valve, substantially as described. 15th. The combination of a sleeve formed with an orifice to admit a hinge pin, a shut-off valve carried by said hinge pin, a nut to close said orifice, a packing nut engagable upon the first-mentioned nut, and a cap engagable on the hinge pin, substantially as described. 16th. The combination of a sleeve formed with an orifice to admit a hinge pin, a nut close said orifice, a packing nut engaged therewith, a cap engaged with the hinge pin, and a locking pin in connection with said cap, substantially as described. 17th. The combination of a sleeve formed with an orifice to admit a hinge pin, a nut to close said orifice, a packing nut engaged therewith, a cap engaged with the hinge pin, and a locking pin having a limited movement in connection with said cap, substantially as described. 18th. The combination of a sleeve, a hinge pin journalled therein provided with connecting arms, a shut-off valve or gate connected with said arms, said gate constructed with lugs provided with square orifices, and said connecting arms constructed with square orifices at their outer ends, and a square pin uniting the connecting arms with said lugs, substantially as described. 19th. The combination of a sleeve, a shut-off valve and a reducing ring engagable upon the outer end of the sleeve, said reducing ring constructed with guide ribs, for the purpose described. 20th. The combination with a sleeve of a head engaged thereupon, a cutter spindle sleeved through said head, a gear provided with a hub mounted upon said spindle, and a ring plate made in halves secured to said head and having a tongue in grooved connection with the hub of said gear, and mechanism to actuate said gear, substantially as described. 21st. The combination of a head, a reciprocatory cutter spindle sleeved through said head, a feed screw bearing against said spindle to feed the spindle to its work, mechanism to advance the feed screw, and means to hold the feed screw from turning, said spindle being independently retractable, substantially as described. 22nd. The combination of a reciprocatory cutter spindle, a support therefor, a feed screw contacting with the end of said spindle, and mechanism to automatically feed said screw, said spindle being independently retractable. 23rd. The combination of a reciprocatory cutter spindle, a support therefor, a feed screw to feed the spindle, automatic mechanism to advance the feed screw, and means to hold the feed screw from turning, said spindle being independently retractable, substantially as described. 24th. The combination of a cutter spindle, a support therefor, a feed screw to advance said spindle, a removable pressure-bar to receive one end of the screw, mechanism to advance the feed screw, and means to prevent the feed screw from turning within the pressure-bar, substantially as described. 25th. The combination of a cutter spindle, a support therefor, a feed screw, a removable pressure-bar to receive one end of said screw, a gear mounted upon said spindle, and automatic mechanism actuated by said gear to operate the feed screw, said feed screw being non-rotatable, substantially as described. 26th. The combination of a reciprocatory cutter spindle, a head through which the spindle is sleeved, mechanism to drive said spindle, automatic and interchangeable feeding devices to feed the spindle to the work, and a pressure-bar carrying the feeding mechanism, said pressure-bar advanceable toward the cutter spindle, substantially as described. 27th. The combination with a reciprocatory cutter spindle, a support therefor, a pressure-bar, a feed screw engaged therewith to advance the cutter spindle, bars 18 and 25 connecting the pressure-bar with said support, sleeves 30 and 31 having a telescopic connection one with the other upon the bar 23, a feed pinion geared with the cutter spindle, a friction roll mounted upon the sleeve 31, a nut to feed the feed screw, a ratchet-wheel to drive said nut, a sliding bracket, and a pawl carried by said bracket to engage the rachet-wheel, said friction roll engageable with said bracket, stbstantially as described. 28th. The combination of a reciprocatory cutter spindle, a removable pressure-bar, a feed screw, a ratchet-wheel located upon the feed screw, and a feed nut 41 engaged with the ratchet-wheel to reciprocate the feed screw, substantially as described. 29th. The combination of a reciprocatory cutter spindle, a support therefor, bars 18 and 23 connected with said support, a pressure-bar clasped to the bars 18 and 23, and a reciprocatory feed screw carried by the pressure-bar to advance the cutter spindle, said pressure-bar having a double clasp to engage one of the bars 18 and 23, substantially as described. 30th. The combination of a reciprocatory cutter spindle, a head provided with a perforated diaphragm, a headed screw extending longitudinally of the spindle engaging the head to said spindle, and a cutter blade secured to said head, substantially as described. 31st. The combination with a reciprocatory cutter spindle, of a head keyed to said spindle and provided with a perforated diaphragm, a headed screw extending longitudinally of the spindle engaging the head to the spindle to hold the head from sliding upon said spindle, and a cutter head secured to said head, substantially as described. 32nd. The combination of a sleeve engagable upon a pipe and provided with lugs, a tie-plate secured upon said sleeve, tie-rods having a jointed engagement with the tie-plate, the opposite ends of said rods provided with sleeve nuts to engage said lugs, and jam nuts to lock the sleeve nuts in place, substantially as described. 33rd. The combination of a sleeve provided with lugs, bands to engage said sleeve upon a pipe, a tie-plate, tie-rods connected to said tie-plate, sleeve nuts engaged with the opposite extremities of the tie-rods to engage said lugs, jam nuts to lock the sleeve nuts, hooked bolts carried by the sleeve nuts to hook over the bands, and thumb nuts upon the outer ends of the hooked bolts to secure the tie-rods to the bands, substantially as described. 34th. The combination of a sleeve, a hinge pin, a swinging gate carried by said hinge pin to seat within the sleeve, a by-pass to open through the sleeve and hinge pin upon both sides of the seat, and means to hold the gate from closing without design, substantially as described. 35th. The combination of a sleeve, a hinge pin, a swinging gate to seat within the sleeve, connecting arms to connect the gate with said hinge pin, a pin to engage said gate with the connecting arms, said sleeve formed with an opening through which the pin may be engaged in place with the connecting arms and gate, and means to close said opening, substantially as described. 36th. In combination, a pipe, a sleeve, means to secure the sleeve upon the pipe, a compressible packing between the pipe and the sleeve, a compressible