

March 17, 1931.

T. PATTERSON

1,796,763

GRIPPING MECHANISM

Filed Dec. 4, 1929

2 Sheets-Sheet 1

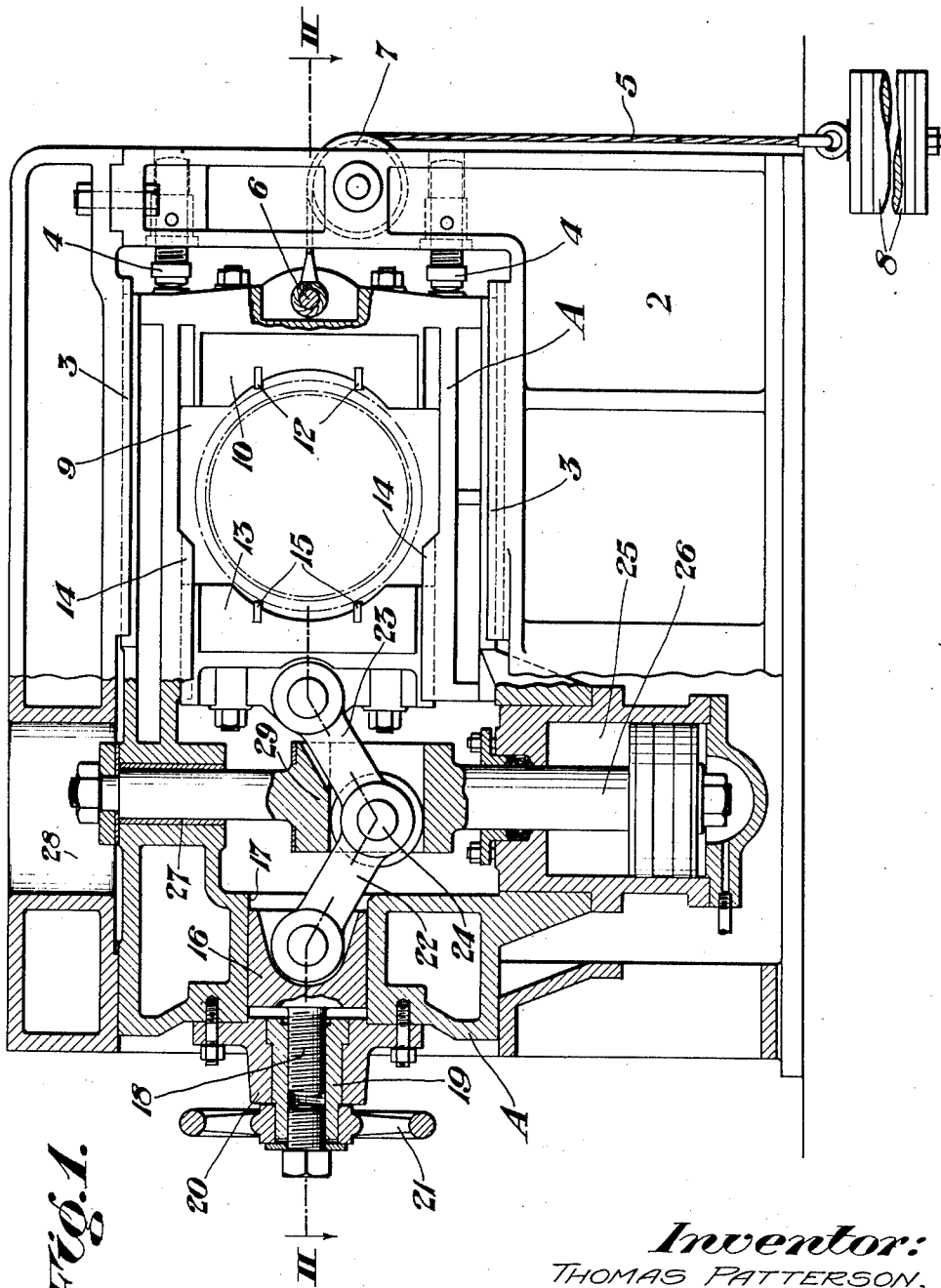


Fig. 1.

Inventor:
THOMAS PATTERSON,

by:

Usina & Rauber

his Attorneys.

March 17, 1931.

T. PATTERSON

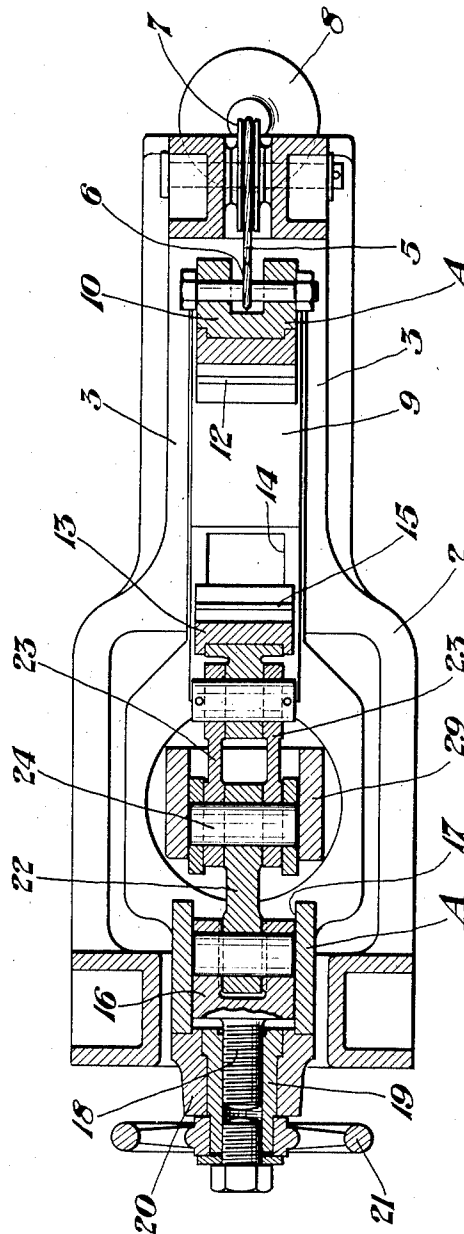
1,796,763

GRIPPING MECHANISM

Filed Dec. 4, 1929

2 Sheets-Sheet 2

Fig. 2.



Inventor:

THOMAS PATTERSON,

by:

Usina & Rauber

his Attorneys.

UNITED STATES PATENT OFFICE

THOMAS PATTERSON, OF GARY, INDIANA, ASSIGNOR TO NATIONAL TUBE COMPANY,
A CORPORATION OF NEW JERSEY

GRIPPING MECHANISM

Application filed December 4, 1929. Serial No. 411,708.

This invention relates to coupling screwing machines and the like, and more particularly to a novel form of pipe gripping apparatus for such machines adapted to grip and hold the pipe while the coupling is being screwed on or off the end of the pipe or other work being done which necessitates the holding of the pipe stationary.

The gripping device of this application is of the floating type, that is, the gripping device itself is adapted to move into gripping position with respect to the pipe rather than to move the pipe into position with respect to the gripping jaws.

Another object is to provide a gripping device which is adjustable to various sizes of pipes.

In the drawings:

Figure 1 is a front elevation of a pipe gripping apparatus, partly in section, and constructed in accordance with this invention.

Figure 2 is a sectional plan taken on the line II-II of Figure 1.

Referring more particularly to the drawings, the numeral 2 designates the frame of the apparatus. A carriage A is slidably mounted in guideways 3 in the frame 2 for movement from side to side thereof.

Adjustable stops 4 are provided for limiting the movement of the carriage A toward the one side of the frame 2. A cable or other flexible member 5 is secured to the end of the carriage A nearest the stops 4, as at 6, and trained over the sheave 7 journaled in the frame 2. A suitable counter-weight 8 of sufficient weight to normally and yieldably hold the carriage A against the stops 4 is secured to the free end of the cable 5.

The carriage A is provided with an opening or window 9 through which the pipe to be gripped is passed. A jaw 10 is fixedly secured at the side of the window 9 nearest the stops 4 and is provided with bits 12 for engaging the pipe.

A second jaw 13 is slidably mounted in

guideways 14 in the carriage A for movement toward and away from the jaw 10 and is provided with bits 15 for engaging the pipe.

A plug 16 is slidably mounted in an opening 17 in the carriage A for movement toward and away from the jaw 13. The plug 16 is provided with a threaded stem 18 which is in threaded engagement with a nut 19 journaled in a bearing 20. A hand wheel 21 is keyed or otherwise secured on the nut 19 to facilitate the rotation of the nut to adjust the plug 16 toward or away from the jaw 13.

Toggle-arms 22 and 23 are pivotally connected, as at 24, and the arm 22 is pivotally connected to the plug 16 while the arms 23 are pivotally connected to the jaw 13. The toggle-arms 22 and 23 are adapted to move the jaw 13 toward and away from the jaw 10 when they are extended or straightened and collapsed, and the throw of the toggles is adapted to be adjusted by adjusting the plug 16 toward or away from the jaws.

A fluid pressure cylinder 25 is mounted in the carriage A and has an extended piston rod 26 which extends up through a guide opening 27 in the carriage A and is adapted to move into an elongated opening 28 in the frame 2. The opening 28 is of such size that the rod 26 will not engage or strike the frame 2 when it is moved with the carriage A.

The piston rod 26 is provided with a sleeve-like head 29 intermediate its ends which is mounted around the joint 24 of the toggle-arms and has a sliding fit therewith so that vertical movement of the piston rod will operate to extend or collapse the toggle-arms.

In operation when a pipe is moved into position between the jaws 10 and 13 the cylinder 25 will be operated to force out the piston rod 26 and extend the toggle-arms 22 and 23 and move the jaw 13 into engagement with the pipe. After the jaw 13 engages the pipe, continued operation of the cylinder 25 will cause the toggle-arms to be further extended

and thereby force the jaw 13 against the stationary pipe and cause the carriage A to move relative to the jaw 13 and against the pull of the counter-weight 8. This movement of floating of the carriage will be continued until the jaw 10 engages and grips the pipe.

When it is desired to change the throw of the toggle-levers or arms to vary the movement of the jaw 13 and carriage A to grip various sizes of pipes it is only necessary to adjust the plug 16.

While I have shown and described one specific embodiment of my invention it will be understood that I do not wish to be limited thereto since various modifications may be made without departing from the scope thereof, as defined in the appended claims.

I claim:

1. A pipe grip comprising a stationary rigid frame having a window open at one end and provided with top and bottom guideways, a carriage slidably mounted for end-wise movement in and held against vertical movement by said guideways, means for normally and yieldably urging said carriage toward the closed end of said window, a gripping jaw fixedly mounted in said carriage at the end nearest the closed end of said window, a second gripping jaw slidably mounted in said carriage for movement toward and away from said first named jaw, and means for sliding said second named jaw relative to said carriage to engage a pipe mounted between said jaws, said means also being adapted to cause said carriage to move bodily away from the closed end of said window toward which it is urged after said second named jaw has engaged the pipe to thereby engage said first named jaw with the pipe.

2. A pipe grip comprising a stationary rigid frame having a window open at one end and provided with top and bottom guideways, a carriage slidably mounted for end-wise movement in and held against vertical movement by said guideways, means for normally and yieldably urging said carriage toward the closed end of said window, said carriage having a window closed at the end nearest the closed end of said window in said frame and open at its other end, top and bottom guideways in said second named window, a gripping jaw fixedly mounted in said second named window adjacent the closed end thereof, a second gripping jaw slidably mounted in the guideways of said second named window for movement toward and away from said first named jaw, and means for sliding said second named jaw relative to said carriage to engage a pipe mounted between said jaws, said means also being adapted to cause said carriage to move bodily away from the closed end of said first named window toward which it is urged after said second named jaw has engaged the pipe

to thereby engage said first named jaw with the pipe.

3. A pipe grip comprising a stationary rigid frame having a window open at one end and provided with top and bottom guideways, a carriage slidably mounted for end-wise movement in and held against vertical movement by said guideways, means for normally and yieldably urging said carriage toward the closed end of said window, adjustable means for limiting the movement of said carriage toward the closed end of said window, a gripping jaw fixedly mounted in said carriage at the end nearest the closed end of said window, a second gripping jaw slidably mounted in said carriage for movement toward and away from said first named jaw, and means for sliding said second named jaw relative to said carriage to engage a pipe mounted between said jaws, said means also being adapted to cause said carriage to move bodily away from the closed end of said window toward which it is urged after said second named jaw has engaged the pipe to thereby engage said first named jaw with the pipe.

4. A pipe grip comprising a stationary rigid frame having a window open at one end and provided with top and bottom guideways, a carriage slidably mounted for end-wise movement in and held against vertical movement by said guideways, means for normally and yieldably urging said carriage toward the closed end of said window, said carriage having a window closed at the end nearest the closed end of said window in said frame and open at its other end, top and bottom guideways in said second named window, a gripping jaw fixedly mounted in said second named window adjacent the closed end thereof, a second gripping jaw slidably mounted in the guideways of said second named window for movement toward and away from said first named jaw, toggle-arms for sliding said second named jaw relative to said carriage and said carriage bodily relative to said frame so as to grip a pipe mounted between said jaws, said arms being connected to said carriage and to said second named jaw, and means for operating said toggle-arms.

5. A pipe grip comprising a stationary rigid frame having a window open at one end and provided with top and bottom guideways, a carriage slidably mounted for end-wise movement in and held against vertical movement by said guideways, means for normally and yieldably urging said carriage toward the closed end of said window, said carriage having a window closed at the end nearest the closed end of said window in said frame and open at its other end, top and bottom guideways in said second named window, a gripping jaw fixedly mounted in said

second named window adjacent the closed end thereof, a second gripping jaw slidably mounted in the guideways of said second named window for movement toward and away from said first named jaw, and means carried by said carriage for sliding said second named jaw relative to said carriage to engage a pipe mounted between said jaws, said means also being adapted to cause said carriage to move bodily away from the closed end of said first named window after said second named jaw has engaged the pipe so as to engage said first named jaw with the pipe.

mounted between said jaws, a plug adjustably mounted in said carriage for movement toward and away from said jaws, said arms being connected to said plug and to said second named jaws, said plug being adjustable to vary the throw of said arms, and a fluid pressure cylinder mounted on said carriage for operating said toggle-arms. 70

In testimony whereof, I have hereunto set my hand.

THOMAS PATTERSON.

6. A pipe grip comprising a stationary rigid frame having a window open at one end and provided with top and bottom guideways, a carriage slidably mounted for end-wise movement in and held against vertical movement by said guideways, means for normally and yieldably urging said carriage toward the closed end of said window, said carriage having a window closed at the end nearest the closed end of said window in said frame and open at its other end, top and bottom guideways in said second named window, a gripping jaw fixedly mounted in said second named window adjacent the closed end thereof, a second gripping jaw slidably mounted in the guideways of said second named window for movement toward and away from said first named jaw, toggle-arms for sliding said second named jaw relative to said carriage and said carriage bodily relative to said frame so as to grip a pipe mounted between said jaws, a plug adjustably mounted in said carriage for movement toward and away from said jaws, said arms being connected to said plug and to said second named jaw, said plug being adjustable to vary the throw of said arms, and means carried by said carriage for operating said toggle-arms.

80

7. A pipe grip comprising a stationary rigid frame having a window open at one end and provided with top and bottom guideways, a carriage slidably mounted for endwise movement in and held against vertical movement by said guideways, means for normally and yieldably urging said carriage toward the closed end of said window, said carriage having a window closed at the end nearest the closed end of said window in said frame and open at its other end, top and bottom guideways in said second named window, a gripping jaw fixedly mounted in said second named window adjacent the closed end thereof, a second gripping jaw slidably mounted in the guideways of said second named window for movement toward and away from said first named jaw, toggle-arms for sliding said second named jaw relative to said carriage and said carriage bodily relative to said frame so as to grip a pipe

90

95

100

103

110

116

120

125

180