

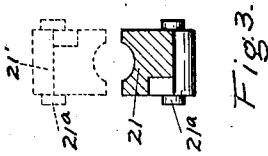
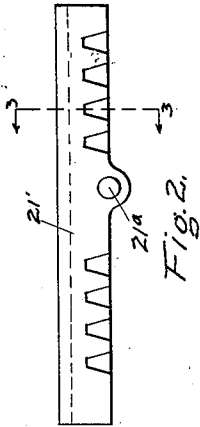
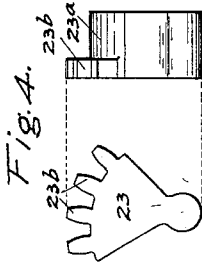
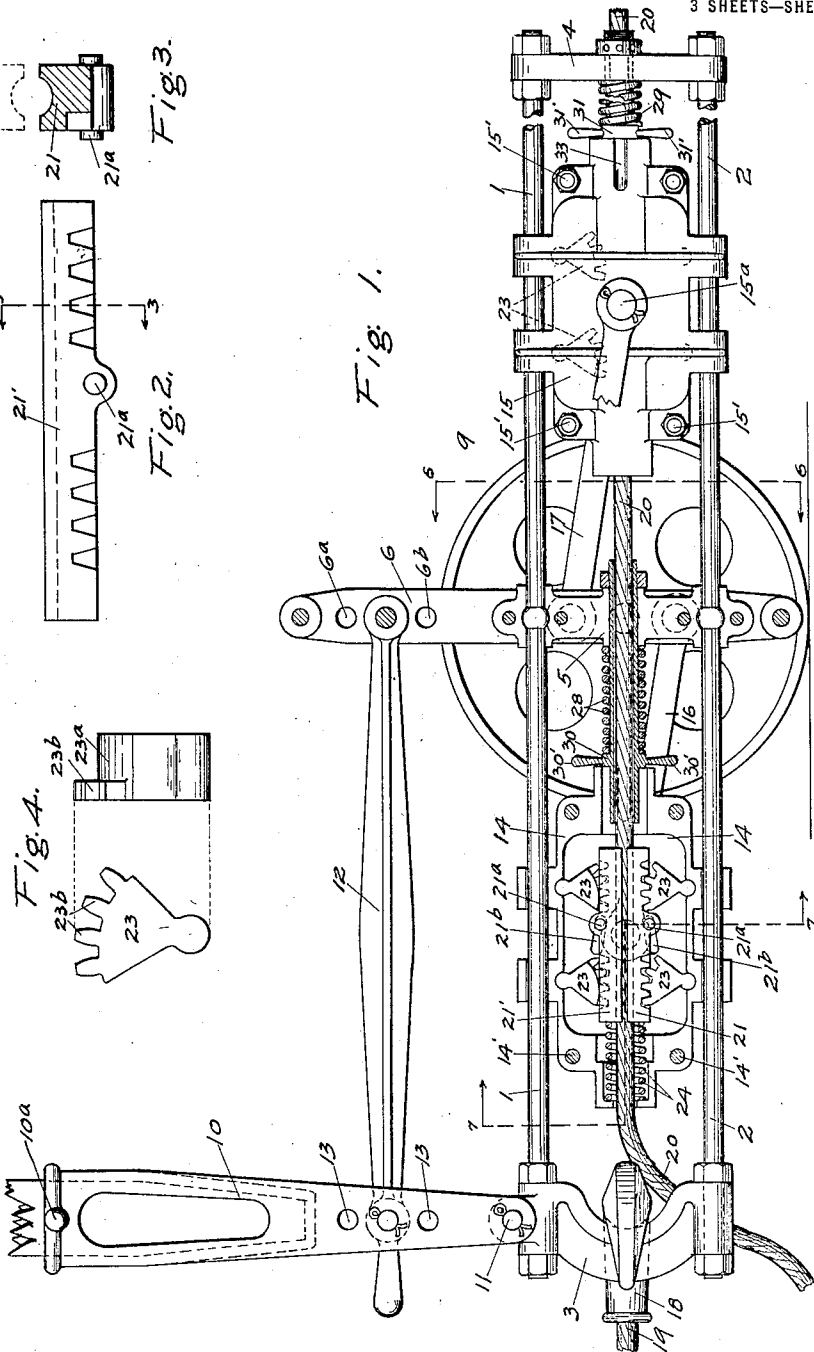
J. F. GORMAN.
STUMP PULLER.

APPLICATION FILED DEC. 29, 1916.

1,350,994.

Patented Aug. 24, 1920.

3 SHEETS—SHEET 1.



Witnesses:

J. H. Strong
J. M. Griffin

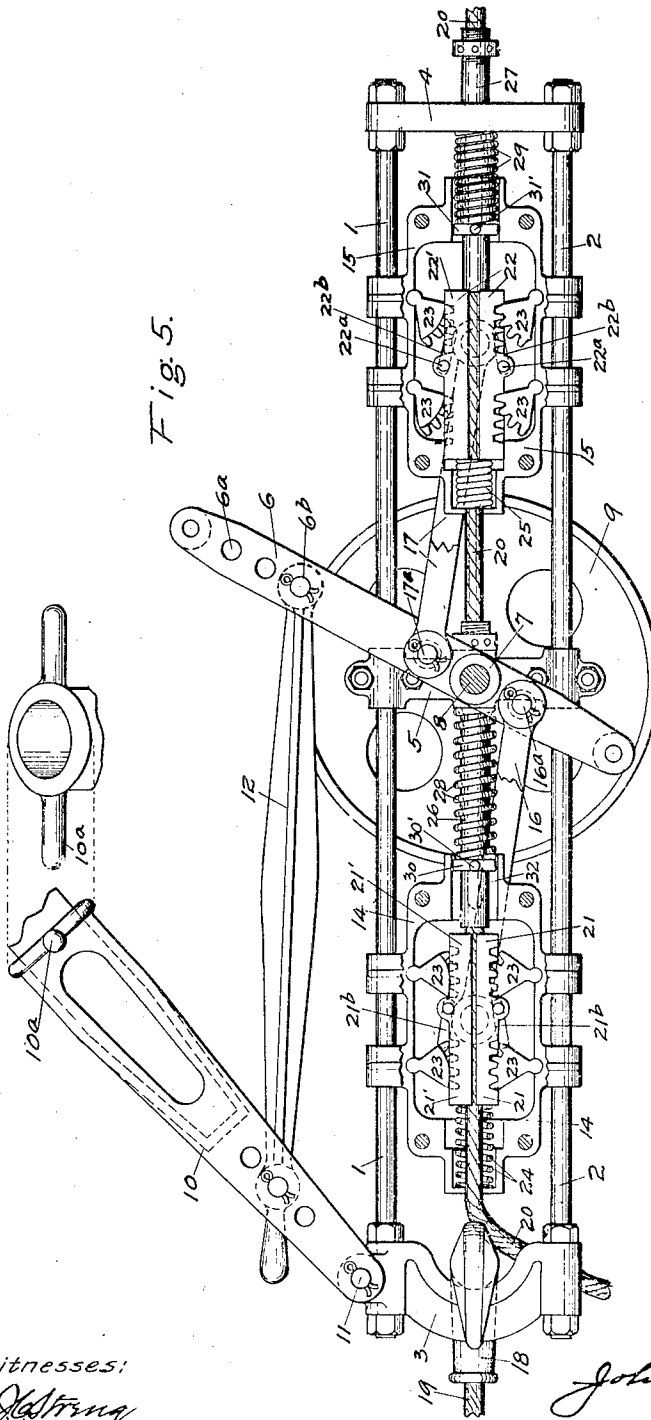
John F. Gorman
Inventor,
By *D. Ritzberg*
Att'y.

1,350,994.

Patented Aug. 24, 1920.

3 SHEETS—SHEET 2.

Fig. 5.



Witnesses:

W. H. King

J. M. Griffin

John F. Gorman
Inventor,

By *W. H. King*

Atty.

J. F. GORMAN,
STUMP PULLER.
APPLICATION FILED DEC. 29, 1916.

1,350,994.

Patented Aug. 24, 1920.
3 SHEETS—SHEET 3.

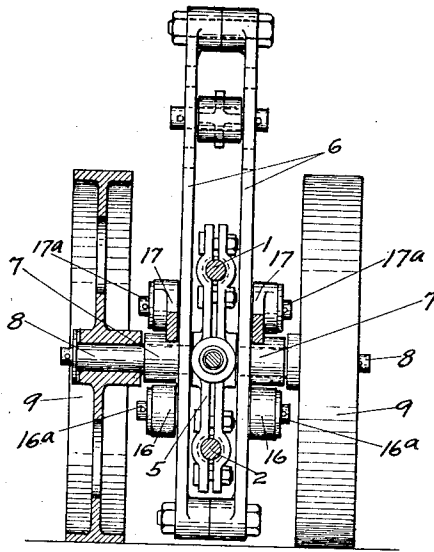


Fig. 6.

Fig. 7.

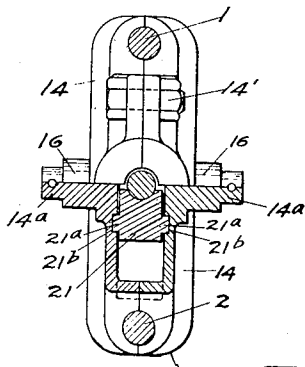
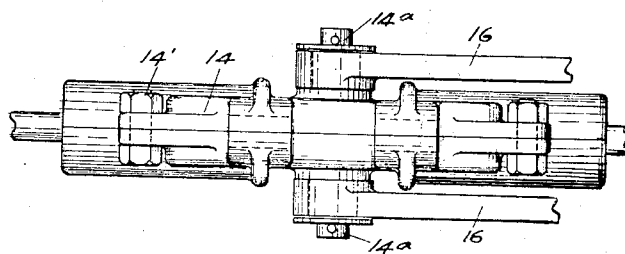


Fig. 8.



Witnesses:

J. M. Ruffin
J. M. Ruffin

John F. Gorman
Inventor.
By *W. Ritzberg*
Att'y.

UNITED STATES PATENT OFFICE.

JOHN F. GORMAN, OF SEATTLE, WASHINGTON.

STUMP-PULLER.

1,350,994.

Specification of Letters Patent.

Patented Aug. 24, 1920.

Application filed December 29, 1916. Serial No. 139,663.

To all whom it may concern:

Be it known that I, JOHN F. GORMAN, a citizen of the United States, residing in the city of Seattle, county of King, and State of Washington, have invented certain new and useful Improvements in Stump-Pullers, of which the following is a specification.

My invention relates to stump pullers, and more particularly to a mechanism adapted to be anchored to a fixed object, and by means of which pull can be applied to a cable passing through said mechanism.

Among the salient objects of my invention are,—to provide an improved mechanism of the character referred to, by means of which pull can be applied to a cable passing through said mechanism by the operation of a lever, which is connected with and operates gripping devices adapted to alternately grip the cable; to provide in a device of the character referred to means whereby said mechanism can be operated to release the pull on said cable, step by step, without letting loose of the same; to provide in a device of the character referred to means for getting various operating speeds.

Other objects and advantages will be apparent from the following description of one practical embodiment of my invention, taken in connection with the accompanying three sheets of drawings in which,—

Figure 1 is a side elevation of my invention, with parts shown in section;

Fig. 2 is a side elevation of one of the lower gripping jaws, adapted to grip the cable;

Fig. 3 is a cross sectional view thereof, taken on line 3—3 of Fig. 2, with the upper gripping jaw indicated in dotted lines;

Fig. 4 shows side and edge views of one of the operating segments which cooperate with the gripping jaws, shown in Figs. 2 and 3;

Fig. 5 is a side elevation of my invention with the reverse mechanism set for operation;

Fig. 6 is a vertical cross sectional view of the device taken on line 6—6, Fig. 1;

Fig. 7 is a combination vertical and horizontal cross sectional view taken on line 7—7 of Fig. 1; and

Fig. 8 is a fragmentary top plan view of that part of the mechanism shown in Fig. 1, to which the section line 7—7 is applied.

Referring now more in detail to the drawings, my invention comprises a main

frame composed of top and bottom guide rods 1 and 2, connected together at their opposite ends by means of vertical connecting heads 3 and 4, and connected near their middle portions with an intermediate connecting member 5, as clearly shown in Figs. 1 and 6. Pivotaly connected to the opposite sides of the connecting member 5, is a vertical lever structure 6, the two side members of said lever structure being pivoted as at 7—7, Fig. 6, upon laterally projecting studs on shafts 8—8, which also constitute bearing shafts for two supporting wheels 9—9, as will be clear from Fig. 6. The sides of the vertical lever structure 6, are spaced apart sufficiently so that said lever structure is free to be rocked, in opposite directions longitudinally of the guide rods 1 and 2, in a manner now to be described.

A main operating lever 10, is pivotaly connected, as at 11, to the connecting head 3. Said lever 10, is connected by means of a link, or pitman, 12, with the operating lever structure 6. In order that the opposite ends of said link, or pitman, 12, may be connected in different positions to the operating lever 10, and thus make possible various speeds, said operating lever is provided with different connecting holes, as 13—13.

The lever structure 6, is also provided with additional adjustment holes as 6^a and 6^b. Thus it will be seen that as the lever 10 is rocked on to its pivot 11, the lever structure 6, is likewise rocked on its pivot mounting, at 7, said levers being shown rocked to the extreme right in Fig. 5.

Slidably mounted between the guide rods 1 and 2, near their opposite ends, are two grip boxes 14 and 15, each composed of two pieces bolted together at their corners, as by means of bolts 14' and 15'. Said grip boxes are each provided on their opposite sides with projecting lugs 14^a and 15^a, by means of which said grip boxes are connected with pitmen 16—16 and 17—17, to the vertical lever structure 6, as at 16^a and 17^a. Thus it will be understood that by rocking the main lever 10, and the vertical lever structure 6, said grip boxes 14 and 15, are moved toward and from each other on said main frame.

Said main frame is provided at its connecting head 3, with an anchor hook 18, by means of which, and a cable 19, said main frame can be anchored to any fixed object,

A pull cable 20, passes through the connecting head, 4, at the opposite end of the frame, through the grip box 15, through the middle connecting member 5, and through the grip box 14, as will be clear from the drawings, the end of said pull cable projecting loosely from the opposite end of grip box 14, as shown in Figs. 1 and 5. Mounted in each of said grip boxes 14 and 15, is a pair of gripping jaws 21—21' and 22—22', said jaws being provided at their opposite sides with lug members as 21^a—21^a and 22^a—22^a, which move in grooves 21^b—21^b and 22^b—22^b, formed in the inner faces of the sides of the grip boxes, as will be clearly understood by reference to Fig. 7, and also to Figs. 1 and 5. This interfitting between the opposite sides of the jaws and the inner opposite faces of the grip boxes, tends to hold the gripping jaws in proper relationship, even though there may be no pull cable passing through the machine and between said gripping jaws, and at the same time said grooves permit said jaws to move toward each other into gripping engagement with the cable as they move in one direction and to move away from each other and out of gripping engagement with the cable, as they are moved in the opposite direction.

Mounted in each of said grip boxes 14 and 15, above and below said gripping jaws 21—21' and 22—22', are eccentrically formed segments, as 23, said segments all being alike and being pivotally seated at their outer ends in the sides of the grip boxes 14 and 15, and at their inner ends being provided with teeth which interfit with the backs of the gripping jaws 21—21' and 22—22', as will be clearly understood from Figs. 1 and 5. In Fig. 4, is shown an enlarged detail of these eccentric segments, which are preferably constructed with a portion of their outer ends formed into a smooth eccentric face, as 23^a, and a portion thereof provided with the teeth, as 23^b. Thus the teeth portions 23^b are adapted to interfit with the backs of the gripping jaws 21—21' and 22—22', while the smooth eccentric face portions 23^a, bear upon the smooth portions of the backs of said gripping jaws, as may be more clearly understood from reference to Figs. 2 and 3, taken in connection with Fig. 4.

Mounted in the left hand ends of the grip boxes 14 and 15, are coiled expansion springs 24 and 25, through which the pull cable 20 passes, which springs normally bear inwardly against the gripping jaws 21—21' and 22—22', tending to force said jaws normally into gripping engagement on the pull cable 20, for as said gripping jaws 21 and 21', in grip box 14, Fig. 1, for example, are forced to the right by said spring 24, they are also forced toward each other, and into grip-

ping engagement with the pull cable 20, by the eccentric segments 23—23. Said main lever is provided on its opposite sides with hand grips, as 10^a, by means of which said device can be pulled on its carrier wheels 9—9.

From the foregoing description, referring especially to Fig. 1, it will be understood that as the main lever 10 is oscillated, it also oscillates the lever structure 6, moving the grip boxes alternately away from and toward each other. As said grip boxes are removed to the right their gripping jaws slide over the pull cable 20, but as they are moved to the left they grip the cable, said grip boxes alternately gripping and advancing the cable through the machine. For example, in Fig. 1, if the lever 10 is moved to the right, grip box 14 will be forced to the left, its eccentric segments 23 and its spring 24 operating to force the jaws 21 and 21' into gripping engagement with the pull cable 20, and thereby pulling the cable with it. During this operation the grip box 15, is being forced to the right and slides over the cable for the reason that its movement relative to the cable, and the set of its eccentric segments 23, is such that its jaws are not forced into gripping engagement with said cable, but are sufficiently loose to slide over the cable to the right. As the lever 10 is moved to the left, the grip box 15, is also moved to the left, gripping the cable and pulling it therewith, at the same time thrusting, as it were, the free end of the pull cable 20, through the grip box 14, which is moving to the right. Thus by oscillating the main lever 10, and alternately moving the grip boxes 14 and 15, away from and toward each other, they alternately grip and pull the cable 20 through the machine.

I will now describe the mechanism by means of which I am able to reverse the action of the machine on the cable, that is, release the pull on the cable 20, step by step, as the main lever 10 is oscillated.

Referring to Fig. 5, I have provided tubular members 26 and 27, slidably mounted through the right hand ends, respectively, of the grip boxes 14 and 15, the tubular member 26, working through the middle connecting member 5, and the tubular member 27, working through the connecting head 4, at the right hand end of the machine. Mounted on said tubular members 26 and 27 are coiled springs, designated, respectively, 28 and 29, which bear at their outer ends, respectively, against the connecting member 5, and the connecting head 4. At their inner ends said springs bear against collars 30 and 31, secured to the tubular members 26 and 27, said collars being provided with handle portions 30' and 31', as clearly shown in Figs. 1 and 5. The right hand ends of the grip boxes 14 and 15, are pro-

vided on their opposite sides with slots as 32 and 33. When the collars 30 and 31 are in the positions shown in Fig. 1, the handle portions 30' and 31' bear against the outer right hand ends, respectively, of the grip boxes 14 and 15. This is the position in which these parts are held for the normal or pulling operation of the machine, as hereinbefore described and as shown in Fig. 1. These tubular members 26 and 27, with their springs 28 and 29, perform no function whatever in this position. When, however, it is desired to release the pull on the pull cable 20, said tubular members 26 and 27 are turned so that their handle portions 30' and 31' move, respectively, into the slots 32 and 33, the inner ends of said tubular members 26 and 27, then being free to be forced against the right hand ends, respectively, of the gripping jaws 21—21' and 22—22', in opposition to the operation of the springs 24 and 25, at the opposite ends of said gripping jaws. The springs 28 and 29, are stronger than the springs 24 and 25. In operating the machine to release, step by step, the pull cable 20, referring to Fig. 5, with the lever moved to the right, as shown, the grip box 14, is in holding engagement with the cable, its jaws 21 and 21' being in gripping engagement therewith. The pull on the cable is sufficient to keep said jaws in holding engagement with the cable as the lever 10 is moved to the left, which moves grip box 14 to the right, the cable moving therewith. The grip box 15, is sliding over the cable, its gripping jaws being pressed to the left by the spring 29, in opposition to spring 25, which is compressed, as shown. As the gripping box 15, moves sufficiently to the left so that the tension of the spring 29, and its tubular member 27 no longer operates against the right hand end of its gripping jaws 22 and 22', said gripping jaws 22 and 22' are then moved to the right by spring 25, ready to grip the cable 20 and take the load. As they take the load it is released sufficiently from gripping jaws 21 and 21' of grip box 14, which has been moved to the right and compressed spring 28, which spring 28 and its tube 26 now operates against the right hand ends of the gripping jaws 21 and 21' to force them loose from the cable so that the grip box 14 can slide over the cable as it is moved to the left while the grip box 15 is carrying the cable and its load to the right. As it comes to this position, grip box 14, having now been moved to the left, its gripping jaws 21 and 21' having been moved away from the end of the tubular member 26, are now forced into gripping engagement with the pull cable 20 by their spring 24, thus taking the load. Immediately following this action, spring 29, which has been compressed by the movement of grip box 15

to the right, operates to move gripping jaws 22 and 22' to the left, and out of engagement with the pull cable 20, in opposition to spring 25. Thus by turning the collars 30 and 31 so that their handle portions 30' and 31' move into the slots 32 and 33 at the right hand ends of the boxes 14 and 15, to allow the heavy springs 28 and 29 to function, as just described, my machine can be used to release, or pay out, step by step, the pull cable with its load thereon.

It will be apparent from the drawings that by changing the positions of the opposite ends of the connecting link, or pitman, 12, to different positions on the operating lever 10, or the vertical lever structure 6, that different speeds in the action of the gripping boxes 14 and 15 on the pull cable can be had, as well as a change in power.

I am aware that changes can be made in my invention as here illustrated, without departing from the spirit thereof, and I do not, therefore, limit the invention to these details, except as I may be limited by the hereto appended claims.

I claim:

1. In a device of the character referred to, in combination, a rigid frame structure having spaced parallel guides thereon, a pair of gripping elements movable thereon, an operating lever pivoted on said rigid frame structure therebetween and connected therewith to move said elements toward and from each other on said frame structure, gripping mechanisms in each of said gripping elements movable toward and from each other, and adapted to grip the opposite sides of a pulling element extending from one gripping element to the other, and means for automatically moving said gripping mechanisms into and out of gripping action as said gripping elements are moved in opposite directions on said main frame.

2. In a device of the character referred to, in combination, a rigid frame structure having spaced parallel guides thereon a pair of gripping elements movable thereon, an operating lever pivoted on said rigid frame structure therebetween and connected therewith to move said elements toward and from each other on said frame structure, gripping jaws movably mounted within said gripping elements and movable toward and from each other, operating elements connected with said main gripping elements and with said gripping jaws and adapted to automatically move said gripping jaws toward each other when said gripping elements are moved in one direction and to release said jaws when moved in the opposite direction, substantially as described.

3. In a device of the character referred to, in combination, a rigid frame structure having spaced parallel guides thereon, a pair

of gripping elements slidable toward and from each other thereon, operating levers pivoted to said rigid frame structure for simultaneously moving said elements, a pair
 5 of gripping jaws in each of said elements and movable toward and from each other and longitudinally within said elements, operating elements pivotally connecting said gripping jaws with said gripping elements,
 10 and means normally moving said gripping jaws into gripping positions, substantially as described.

4. In a device of the character referred to, in combination, a rigid frame structure having spaced parallel guides thereon, a pair of gripping elements slidably mounted thereon and movable toward and from each other, an operating lever therebetween, connected with said main frame and to said gripping
 20 elements at its opposite sides, movable gripping mechanisms in each of said gripping elements, the mechanisms of each element being movable toward and from each other into and out of gripping positions, means
 25 normally moving said gripping mechanism into gripping positions, and means connecting said gripping mechanisms with said gripping elements, whereby they are automatically operated by the operation of said
 30 gripping elements, substantially as described.

5. In a device of the character referred to, in combination, a main frame, a pair of gripping elements movably mounted upon
 35 said main frame, means for moving said gripping elements in opposite directions thereon, said gripping elements being adapted to automatically grip and move therewith a pulling element extending from
 40 one gripping element to the other, and means for reversing the action of said gripping elements, whereby they may be made to grip onto said pulling element during their movements in either direction desired, and
 45 to move freely along on said pulling element when moved in the opposite direction, whereby said device can be operated to move said pulling element step by step in one direction, or it can be set to release said
 50 pulling element, step by step, in the opposite direction.

6. In a device of the character referred to, in combination, a rigid frame structure having two spaced guide members thereon, a
 55 pair of gripping elements movably mounted thereon and adapted to be moved in opposite directions, said gripping elements being provided with oppositely movable jaws adapted to operate automatically to grip
 60 and move therewith a pulling element extending from one gripping element to the other, said means being adapted to operate on said pulling element as said gripping elements are moved in one direction, and to
 65 move inoperatively along said pulling ele-

ment when said gripping elements are moved in the opposite direction, and compound operating levers pivoted on said frame structure with operating connections for moving said gripping elements in op-
 70 posite directions on said main frame, said operating connections being adjustable to vary the speed and power in the operation of said gripping elements by said operating lever.

7. In a device of the character referred to, in combination, a rigid frame structure having two spaced guide members thereon, a pair of gripping elements movably mounted upon said main frame, said gripping elements being provided with oppositely movable jaws for automatically gripping on to a pulling element extending from one gripping element to the other, said means operating on said pulling element as said gripping elements are moved in one direction, and moving inoperatively along said pulling element as said gripping elements are moved in the opposite direction, an operating lever mounted on said main frame, a vertical lever
 85 structure pivotally mounted on said main frame, connecting members from said vertical lever structure to said gripping elements, and a connecting link, or pitman, adjustably connecting said operating lever
 90 with said vertical lever structure, whereby the operation of said operating lever operates said gripping elements in opposite directions on said main frame for moving said pulling element step by step from one gripping element to the other, substantially as described.

8. In a device of the character referred to, a gripping element comprising a box-like structure, a pair of gripping jaws mounted to be moved toward and from each other within
 105 said box-like structure, a plurality of eccentric segments operating within said box-like structure on said gripping jaws, whereby to force said gripping jaws toward each other when moved in one direction within said box-like structure, a spring within said box-like structure normally moving said gripping jaws in one direction within said box-like structure, whereby they are moved toward each other by said eccentric segments and releasable means for moving said jaws in the opposite direction, substantially as described.

9. In a device of the character referred to, a gripping element comprising a box-like structure, a pair of gripping jaws mounted to be moved toward and from each other within said box-like structure, a plurality of eccentric segments operating within said box-like structure on said gripping jaws, whereby to force said gripping jaws toward each other when moved in one direction within said box-like structure, a spring normally moving said gripping jaws in one direction within
 130

said box-like structure, whereby they are moved toward each other by said eccentric segments, and a second spring adapted to be set to operate on said gripping jaws to move them in the opposite direction against the action of said first mentioned spring, substantially as described.

10. In a device of the character referred to, a gripping element comprising a box-like structure, a pair of gripping jaws mounted to be moved toward and from each other within said box-like structure, a plurality of eccentric segments operating within said box-like structure on said gripping jaws, whereby to force said gripping jaws toward each other when moved in one direction within said box-like structure, said eccentric segments having toothed portions adapted to have interfitting engagement with said jaws, a spring normally moving said gripping jaws in one direction within said box-like structure, whereby they are moved toward each other by said eccentric segments, and releasable means for moving said jaws in the opposite direction, substantially as described.

11. In a device of the character referred to, a gripping element comprising a box-like structure, a pair of gripping jaws mounted to be moved toward and from each other within said box-like structure, a plurality of eccentric segments operating within said box-like structure on said gripping jaws, whereby to force said gripping jaws toward each other when moved in one direction within said box-like structure, said eccentric segments having toothed portions adapted to have interfitting engagement with said jaws, and also

having smooth portions having a cooperating bearing engagement with said jaws, a spring normally moving said gripping jaws within said box-like structure, whereby they are moved toward each other by said eccentric segments, and a releasable spring for moving them in the opposite direction at will, substantially as described.

12. A gripping device comprising a box-like structure, a pair of gripping jaws therein, a spring operating to move said jaws in one direction in said box-like structure, means operating to move them toward each other as they are moved by said spring, and a second spring adapted to be set at will to operate to move said jaws in the opposite direction against the tension of said first mentioned spring, substantially as described.

13. A gripping device comprising a box-like structure, a pair of gripping jaws therein, a spring operating to move said jaws in one direction in said box-like structure, means operating to move them toward each other as they are moved by said spring, a second spring adapted to be set at will to operate to move said jaws in the opposite direction against the tension of said first mentioned spring, and means for moving said jaws away from each other as they are moved by said second spring, substantially as described.

Signed at Portland, Multnomah county, Oregon, this 31st day of December, 1916.

JOHN F. GORMAN.

In the presence of—

I. M. GRIFFIN,

J. C. STRENG.