J. B. MILLER.

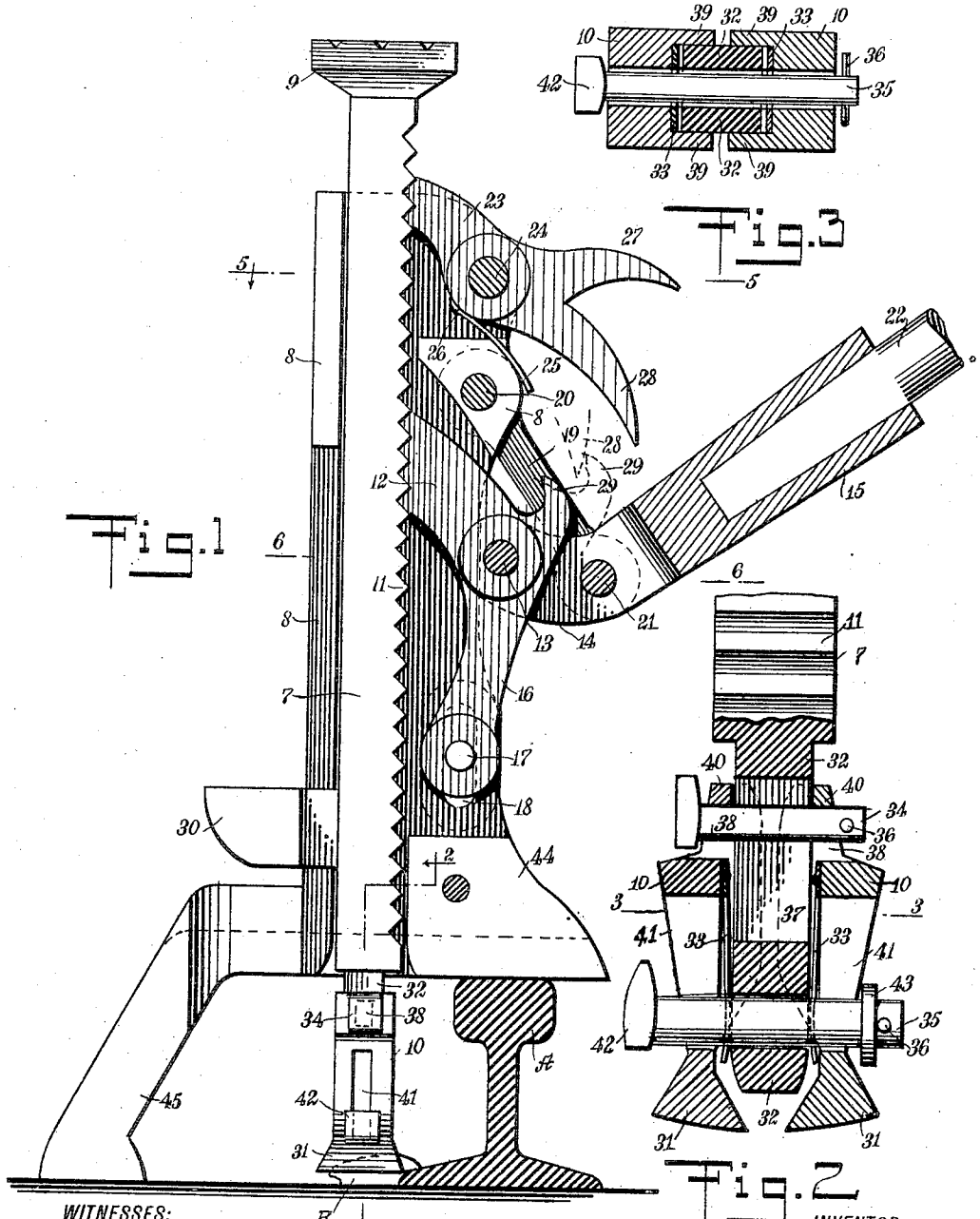
SPIKE PULLER.

APPLICATION FILED MAY 18, 1910.

971,915.

Patented Oct. 4, 1910.

2 SHEETS—SHEET 1.



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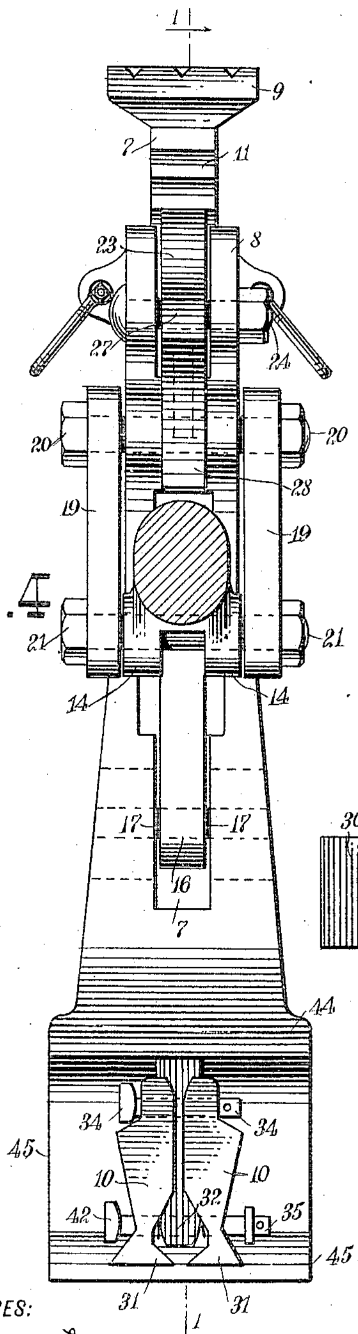

Fig.4

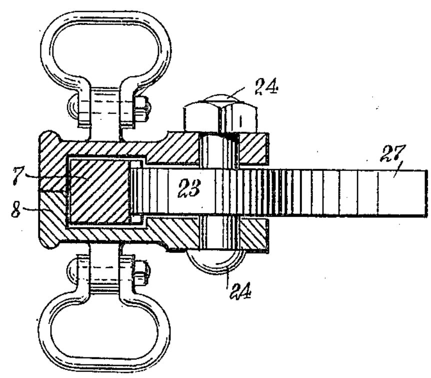

Fig.5

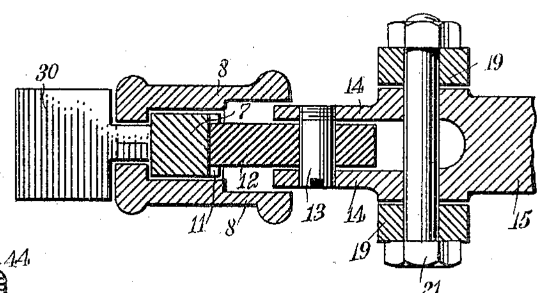

Fig.6

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UNITED STATES PATENT OFFICE.

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SPIKE-PULLER.

971,915. Specification of Letters Patent. Patented Oct. 4, 1910.

Application filed May 18, 1910. Serial No. 561,971.

To all whom it may concern:

Be it known that I, JOHN B. MILLER, a citizen of the United States, and a resident of Mount Pleasant Mills, in the county of Snyder and State of Pennsylvania, have invented a new and Improved Spike-Puller, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide in an implement of the character specified a combined push and draw bar; to provide disengaging means automatic in operation for releasing the draw bar from the article operated upon; and to provide a simple, durable and effective tool of the character specified, the parts whereof are formed on lines adapted to the requirements of the conditions of operation.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a vertical median section, taken on the line 1—1 in Fig. 4, of a lifting jack constructed and arranged in accordance with the present invention; Fig. 2 is a vertical section, fragmentary in form and on an enlarged scale, the section being taken on the line 2—2 in Fig. 1; Fig. 3 is a horizontal section taken on the line 3—3 in Fig. 2; Fig. 4 is a front elevation of the implement, the handle being shown in section; Fig. 5 is a horizontal section taken on the line 5—5 in Fig. 1; and Fig. 6 is a horizontal section taken on the line 6—6 in Fig. 1.

The machine herein described belongs to the class of machines employed particularly in railway construction and repair, and wherein it is desired to shift the operation of the machine from that of an under-lifting tool, as in the ordinary lifting jack, to employment for drawing the spikes with which the rails are secured to the ties. This primal object in the present machine is accommodated by providing a ram bar 7 in guides formed in a frame 8, with an elevator head 9 and a pair of swinging jaws 10, 10. The bar 7 is vertically disposed, and is provided with a series of saw-teeth 11, 11. The teeth 11, 11 are formed on one edge of the bar and turned toward a latch 12. The head of the latch 12 is provided with a series of teeth similar in shape to the teeth 11, and is pivotally connected by means of a pin 13 between the divided arms 14, 14 of a handle socket 15.

The head of the latch 12, as stated, is arranged to engage in holding relation the bar 7. The latch is provided with a tail piece 16, from the sides of the end whereof is extended a guide pin 17. The ends of the pin 17 are extended through slots 18, arranged in vertical disposition on the sides of the frame 8. The slots 18 are elongated to provide for the rise and fall of the pin 17, when and as the head 12 is lifted. In the operation of the latch head 12, it is moved outward from the bar 7 at the upper end of the stroke to disengage the latch, and in thus moving the latch turns on the pin 17 in the slots 18, 18. In the withdrawn position of the head 12, the latch is depressed until the pin 17 of the said latch is at the bottom of the slots 18, 18. In this position the latch 12 is advanced to engage the teeth 11 of the bar 7 to lift the said bar. The operation of the latch to withdraw and reëngage the head thereof with the teeth 11, is effected by the manipulation of the socket handle 15. The handle 15, as stated, is pivotally engaged by means of the pin 13 with the latch 12. The handle 15 is pivotally mounted upon the frame 8 by links 19, 19. The links 19, 19 are pivotally mounted on pins 20 and 21, the former being fixed in the frame 8 and the latter in the handle 15. The links 19, 19 being thus arranged, the handle 15 is permitted to swing to and from the bar 7, the links 19 and pin 21 forming a roving fulcrum for the operation of the handle 15.

The handle 15 is provided with a socket, square or otherwise shaped in cross section, in which is inserted the end of a bar 22. The bar 22 may be extended to any suitable length, thereby increasing the leverage exerted upon the latch 12 and bar 7 connected therewith at the short end of the lever which extends between the pins 21 and 13. The elevated position of the bar 7 is maintained by a detent latch 23. The latch 23 is provided in the head thereof with teeth corresponding with the teeth 11 and adapted to engage the same. The toothed head of the latch 23 rides over the teeth 11, being pivoted in the frame 8 on a pin 24. The head of the latch 23 is held in clicking contact with the teeth 11 by means of a leaf spring 25, fixedly connected to the latch 23 at 26 by a screw or other suitable fastening device. The spring 25 rests upon a shoulder of the

frame 8 directly above the pin 20. Normally, the spring 25 operates to throw the latch 23 into engagement with the teeth of the bar 7. For the purpose of releasing the latch from engagement with the bar 7 it is provided with tail pieces 27 and 28. A further office performed by the tail piece 28 is that the end thereof is engaged by a hook 29 formed on the latch 12, when the latch 23 is rotated on the pin 24, to hold the latch 23 from engagement with the teeth 11. When the latch 23 is thus rotated, the tail piece 28 is disposed in such position that the hook 29 may be passed behind the said tail piece, as shown in dotted lines in Fig. 1. In this position the latch 12 is held by the weight of the bar 22, when it is desired to retain the latches 23 and 12 out of engagement with the bar 7.

The bar 7 is adjusted quickly without employing the latches 12 and 23, by lifting or depressing the bar 7, employing therefor an offset 30. The offset 30 may be depressed by the foot of the operator, or engaged by his hand, to lift the head 9 in contact with the object to be raised. When the bar is adjusted, the bar 22 is lifted, and the hook 29 released from engagement with the tail piece 28 to permit the latch 23 to holdingly engage the bar 7.

When the bar 7 is depressed the jaws 10, 10 are lowered to contact with the head of a spike, or other device with which the said jaws are intended to engage. The jaws 10, 10 are normally arranged so that the gripping heads 31, 31 are closely juxtaposed. The bar 7 continues to pass downward until the wedge-shaped head 32 of the said bar impinges upon the top of the article to be lifted. In passing between the jaws 10, 10 the head 32 bears on leaf springs 33, 33, which are fixedly secured to the jaws 10, 10, and normally extend inward into the path of the head 32, to open the heads 31, 31 of the jaws 10, 10, as seen particularly in Fig. 2 of the drawings. By reason of this arrangement, when the head 32 of the bar 7 impinges upon the article being engaged, the heads 31, 31 of the jaws 10, 10 are extended past the edges of the said article. If this article be a railroad spike, for which the device is more particularly intended, the heads 31, 31 of the jaws 10, 10 will rest below the edge of the head of the spike when the head 32 of the bar 7 rests on top of the said head of the spike.

The jaws 10, 10 are secured to the bar 7 by means of pins 34 and 35. Each of the pins 34 and 35 is of the linchpin order, being held in position by cotter pins 36, 36. The pin 34 is loosely mounted in an elongated slot 37 formed in the head 32, and in transverse slots 38, 38 of the jaws 10, 10. The jaws 10, 10 are constructed to form side laps 39, 39 which override and form guides for the play of the head 32. The slots 38 are partly formed by structure bars 40, 40. The bars 40, 40 form rocking members for the swing of the jaws 10, 10 when forced apart by the head 32. The jaws 10, 10 are further provided with elongated slots 41, 41 in which slides the pin 35. The body portion of the jaws 10, 10 wherein is formed the slots 41, 41 is beveled on its outer face to form runways for the head 42 of the pin 35 and a washer 43 held thereon by the cotter pin 36. The pin 35 is permanently secured in the end of the head 32, a perforation being provided therefor. In the lifted position of the head 32 the pin 35 is carried to the upper end of the slots 41, 41, and in this position the head 42 and the washer 43 impinge upon and deflect inward the jaws 10, 10, moving thereby the heads 31, 31 of the said jaws toward each other, and into gripping relation with any interposed object. Due to this construction and arrangement of the jaws 10, 10 and the head 32, the grip of the heads 31, 31 is increased by resistance to the pull of the bar 7.

It will be observed that when it is desired to discontinue the use of the jaws 10, 10 the same may be quickly and easily removed by withdrawing the cotter pins 36, 36 and removing the pins 34 and 35. The simplification of the construction of the jaws 10, 10 is advantageous in that the jaws may be readily and quickly replaced if damaged or destroyed.

In its application to railway construction the jack is provided with a base 44, arranged to rest on the head of a railway rail A. To assist in steadying the action of the jack the same is provided with an extended foot 45, the end whereof is adapted to rest on the tie beside the rail A when the base 44 is seated on top of the said rail. In this arrangement of the jack the bar 7 and the jaws 10, 10 connected therewith are disposed in line with the spikes B by which the rail A is secured. If the operation of the jack be to employ the head 9 only for lifting from underneath a car, the lateral disposition of the bar 7 from the rail A places the head 9 in desired position for engagement with the truck frame of a car.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A spike puller, comprising a reciprocating ram bar; means for lifting said bar; a plurality of gripping jaws pivotally and slidably mounted in the lower end of said bar, said jaws being provided with outwardly and upwardly inclined outer walls; and a connecting pin mounted on said lower end of said bar in joining relation with said gripping jaws and in contact with said outwardly inclined walls.

2. A spike puller, comprising a recipro-

cating ram bar; means for lifting said bar; a plurality of gripping jaws pivotally and slidably mounted in the lower end of said bar, said jaws being provided with outwardly and upwardly inclined outer walls; a connecting pin mounted on the lower end of said bar in joining relation with said gripping jaws and in contact with said outwardly inclined walls; and resilient devices mounted upon and extended inwardly from the inner walls of said jaws in the path of said bar.

3. A spike puller, comprising a reciprocating ram bar; means for lifting said bar; a plurality of gripping jaws pivotally and slidably mounted in the lower end of said bar, said jaws being provided with outwardly and upwardly inclined walls and with inwardly and downwardly inclined inner walls disposed in the path of said bar; a connecting pin mounted on the lower end of said bar in joining relation with said gripping jaws and in contact with said outwardly inclined walls; and resilient devices mounted upon and extended inwardly from the inner walls of said jaws in the path of said bar.

4. A spike puller, comprising a reciprocating ram bar; means for lifting said bar; a plurality of gripping jaws pivotally and slidably mounted in the lower end of said bar, said jaws being provided with outwardly and upwardly inclined outer walls and with inwardly and downwardly inclined inner walls disposed in the path of said bar; and a connecting pin mounted on the lower end of said bar in joining relation with said gripping jaws and in contact with said outwardly inclined walls.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN B. MILLER.

Witnesses:
J. CALVIN BOYER,
M. A. BOYER.