Jan. 7, 1941. B. O'KEEFFE 2,227,793

HAYFORK

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Fig. 6.

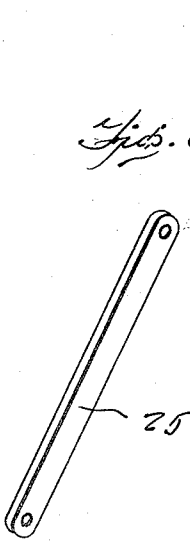


Fig. 1.

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Fig. 2.

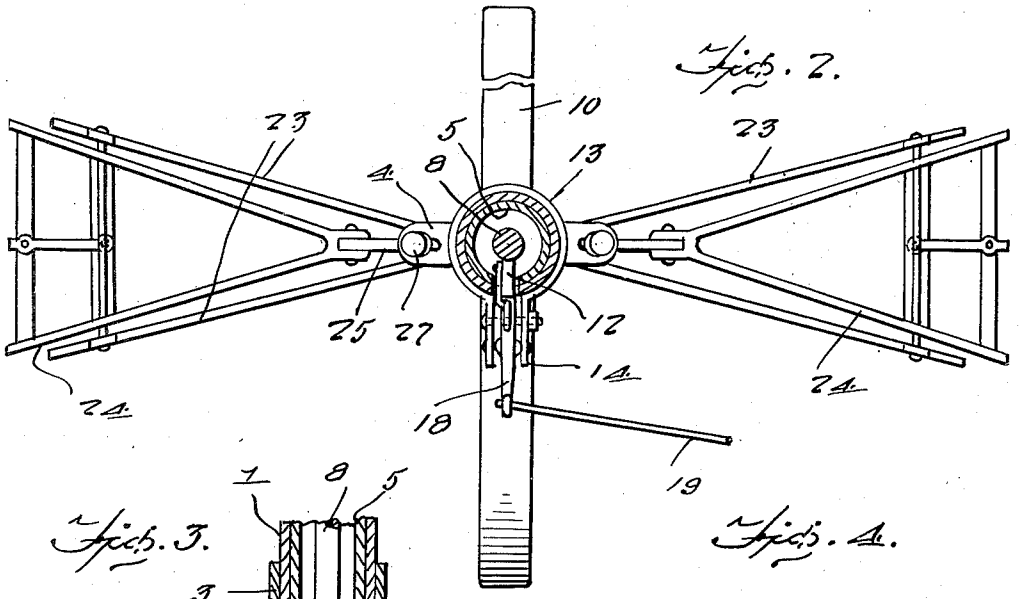


Fig. 3.

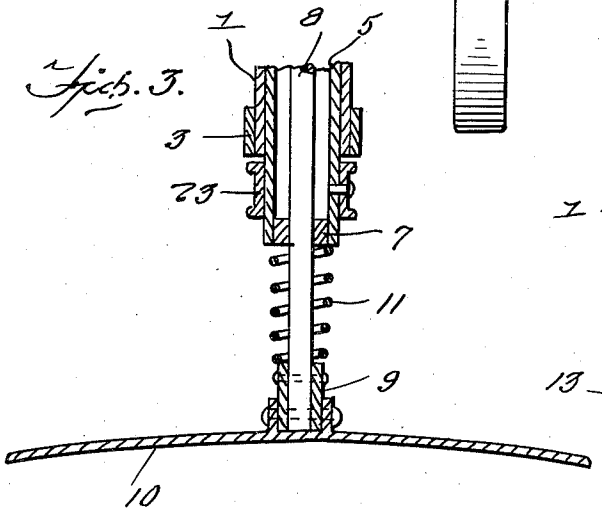


Fig. 4.

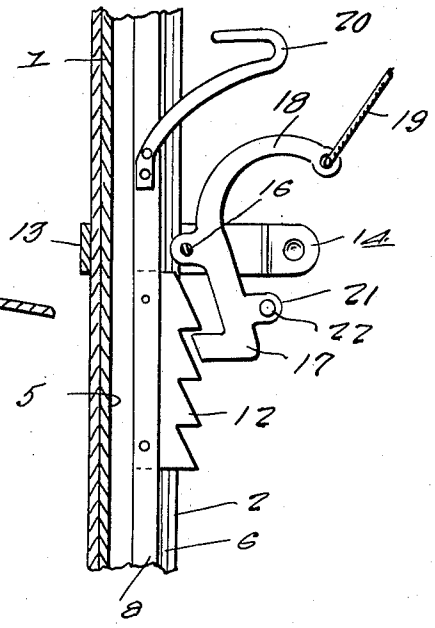
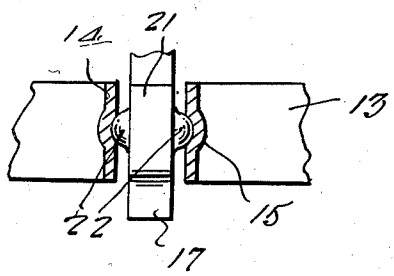


Fig. 5.



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UNITED STATES PATENT OFFICE

2,227,793

HAYFORK

Benjamin O'Keeffe, Fields, Oreg.

Application July 9, 1940, Serial No. 344,576

4 Claims. (Cl. 294—109)

The present invention relates to new and useful improvements in hayforks and has for its primary object to provide, in a device of this character comprising pivotally mounted coacting grapples, novel means for closing said grapples on the hay when said device is lowered thereon.

Another very important object of the invention is to provide a hayfork of the aforementioned character including unique means for releasably securing the grapples in closed position.

Still another very important object of the invention is to provide a hayfork of the character described which is adapted to yieldingly support the load when it is picked up.

Other objects of the invention are to provide a hayfork of the character set forth which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, light in weight and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation of a hayfork constructed in accordance with the present invention.

Figure 2 is a view in horizontal section, taken substantially on the line 2—2 of Fig. 1.

Figure 3 is a vertical sectional view through the lower portion of the device, taken substantially on the line 3—3 of Fig. 1.

Figure 4 is a vertical sectional view, taken substantially on the line 4—4 of Fig. 1.

Figure 5 is a detail view in cross section through the dog securing means.

Figure 6 is a detail view in perspective of one of the grapple operating links.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a metallic tube 1 which may be secured in any suitable manner to a derrick. The tube 1 has formed therein a vertical slot 2. Fixed on the lower end portion of the tube 1 is a collar 3 from diametrically opposite sides of which apertured ears 4 project.

Slidably mounted in the tube 1 is another tube 5. The inner tube 5 has formed therein a vertical slot 6 which communicates with the slot 2 in the outer tube 1. The inner tube 5 extends below the lower end of the outer tube 1 and has mounted in its lower end portion a plug or the like 7.

Slidably mounted in the inner tube 5 and extending below the lower end thereof is a rod 8. Secured on the lower end portion of the rod 8 is a crosshead 9. Mounted transversely beneath the crosshead 9 is a foot 10 for engagement with the hay. A coil spring 11 encircles the lower portion of the rod 8 and is engaged with the crosshead 9 for yieldingly urging said rod downwardly.

Secured on an upper portion of the rod 8 is a ratchet bar 12 which is adapted to travel in the slots 6 and 2. Mounted on the outer tube 1 is a split clamp 13 comprising spaced, opposed resilient legs 14 on its ends having pressed therein sockets 15. Pivotally mounted on a shaft or pin 16 in the clamp 13 is a pawl 17 which is engageable with the ratchet 12 for releasably securing the rod 8 in raised or elevated position against the tension of the coil spring 11 and under the weight of the load. The pawl 17 includes an outwardly curved tail 18 to which a releasing cable 19 is connected. A cam 20 on the rod 8 is engageable with the tail 18 of the pawl 17 for throwing said pawl back into engagement with the ratchet 12 after the load has been tripped. The pawl 17 further includes a lug 21 having detents 22 thereon engageable in the sockets 15 for releasably securing said pawl in disengaged or inoperative position.

Mounted on the lower portion of the inner tube 5 are pairs of inclined, diverging arms 23. Pivotally mounted at intermediate points between the pairs of arms 23 are angular grapples 24. Links 25 connect the inner ends of the grapples 24 to the crosshead 9. Pivotally mounted between the inner portions of the pairs of arms 23 and extending slidably through the apertured ears 4 are supporting rods 26. The rods 26 are provided with heads 27 on their upper ends. The heads 27 may, if desired, be in the form of nuts. Coil springs 28 on the rods 26 rest on the ears 4 and are engaged beneath the heads 27 for yieldingly supporting the arms 23, the grapples 24, etc., on the lower end of the outer tube 1.

It is thought that the operation of the device will be readily apparent from a consideration of the foregoing. Briefly, with the rod 8 and the foot 10 in lowered position, the device is lowered on the hay. As the fork is pushed downwardly on the hay the rod 8 is forced upwardly against the tension of the coil spring 11 thereby swinging the grapples 24 inwardly to closed position on said hay through the medium of the links 25. The pawl 17 engages the ratchet 12 and se-

cures the rod 8 in raised position thus locking the grapples 24 on the hay. The device is now raised through the medium of a suitable derrick and the coil springs 28 yieldingly support the load. To dump the load of hay the pawl 17 is tripped through the medium of the cable 19 for releasing the ratchet 12 thereby permitting the grapples 24 to swing open. When the pawl 17 is tripped the detents 22 engage in the sockets 15 of the resilient clamp 13 for securing the pawl in inoperative position. This renders it unnecessary to hold the trip cable 19. When the load is dumped the rod 8 moves downwardly again and the cam 20 engages the member 18 and kicks the pawl 17 free of the clamp 13 for engagement with the ratchet 12.

It is believed that the many advantages of a hayfork constructed in accordance with the present invention will be readily understood and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. A hayfork comprising a vertical outer tube, an inner tube slidable in said outer tube and extending below the lower end thereof, arms projecting from the lower portion of the inner tube, grapples pivotally mounted on said arms, a rod slidable in the inner tube and extending below the lower end thereof, links operatively connecting the grapples to said rod, means for releasably securing the rod in raised position, and means for yieldingly supporting the inner tube in the outer tube.

2. A hayfork comprising a vertical outer tube, an inner tube slidable in said outer tube and extending downwardly therefrom, pairs of diverging arms on the lower portion of the inner tube, grapples pivotally mounted between said pairs of arms, a rod slidable in the inner tube and extending downwardly therefrom, a crosshead on the lower end portion of said rod, links operatively connecting the grapples to said crosshead, a hay engaging foot mounted on said crosshead, a spring operatively connected to the rod for yieldingly urging said rod downwardly for opening the grapples, means for releasably securing the rod in raised position, and means for yieldingly supporting the inner tube in the outer tube.

3. A hayfork comprising a vertical outer tube, an inner tube slidable in said outer tube and extending downwardly therefrom, pairs of diverging arms on the lower portion of the inner tube, grapples pivotally mounted between said pairs of arms, a rod slidable in the inner tube and extending downwardly therefrom, a crosshead on the lower end portion of said rod, links operatively connecting the grapples to said crosshead, a hay engaging foot mounted on said crosshead, a spring operatively connected to the rod for yieldingly urging said rod downwardly for opening the grapples, means for releasably securing the rod in raised position, and means for yieldingly supporting the inner tube in the outer tube, the last named means including apertured ears projecting from the lower portion of the outer tube, rods pivotally mounted between the pairs of arms and extending slidably through said ears, and coil springs resting on the ears and operatively connected to the rods for yieldingly supporting same.

4. A hayfork comprising a vertical outer tube, an inner tube slidable in said outer tube, the tubes having communicating slots therein, a rod slidable in the inner tube, grapples mounted on the inner tube, means operatively connecting said grapples to the rod for actuation thereby, a ratchet on the rod operable in the slots, and a pawl mounted on the outer tube and engageable with the ratchet for releasably securing the rod in raised position.

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