

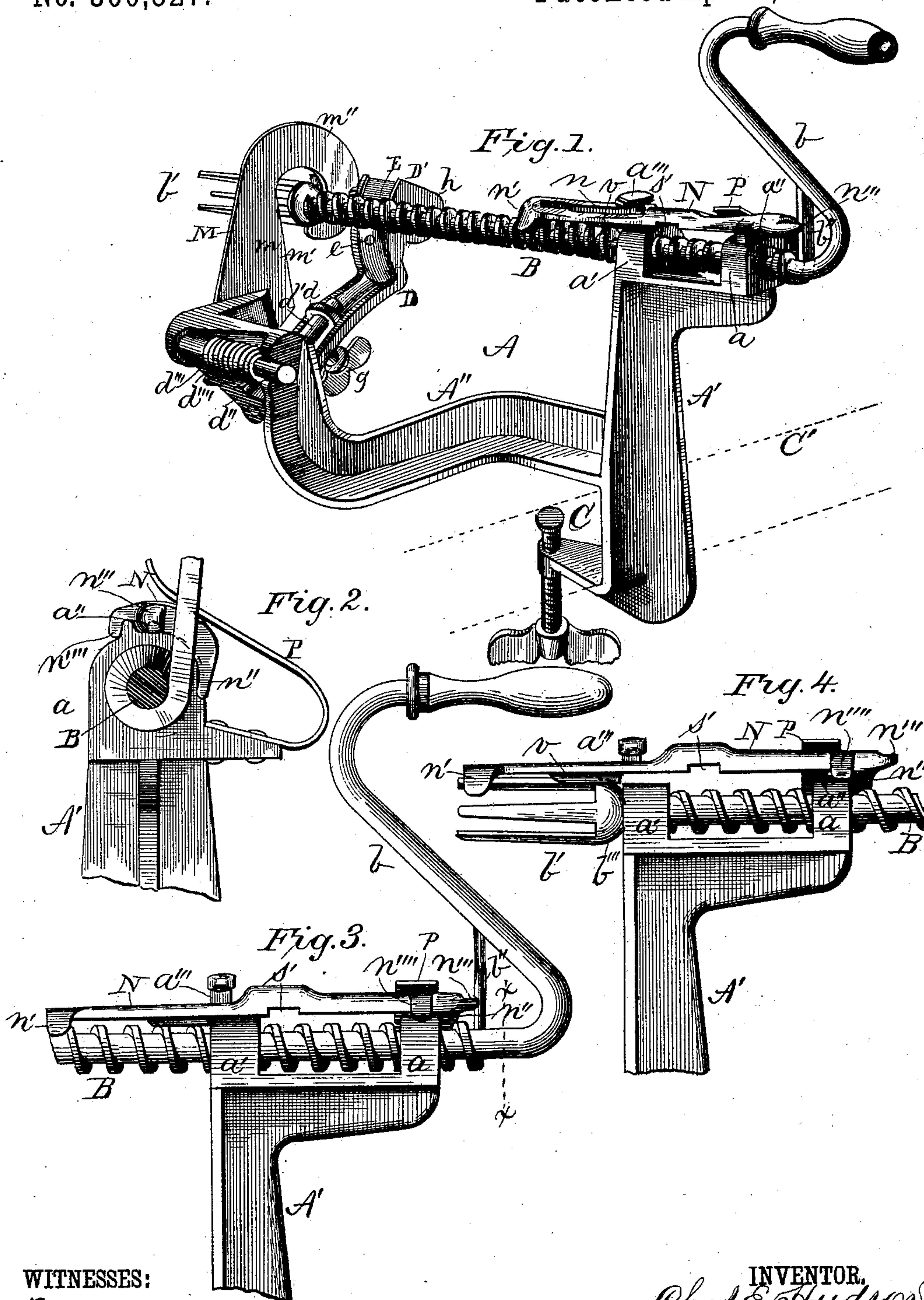
(Model.)

3 Sheets—Sheet 1.

C. E. HUDSON.  
APPLE PARING MACHINE.

No. 360,527.

Patented Apr. 5, 1887.



WITNESSES:

*Ad. L. Duterich*  
*Wm. H. Rowe*

INVENTOR,

*Chas. E. Hudson*  
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ATTORNEY.

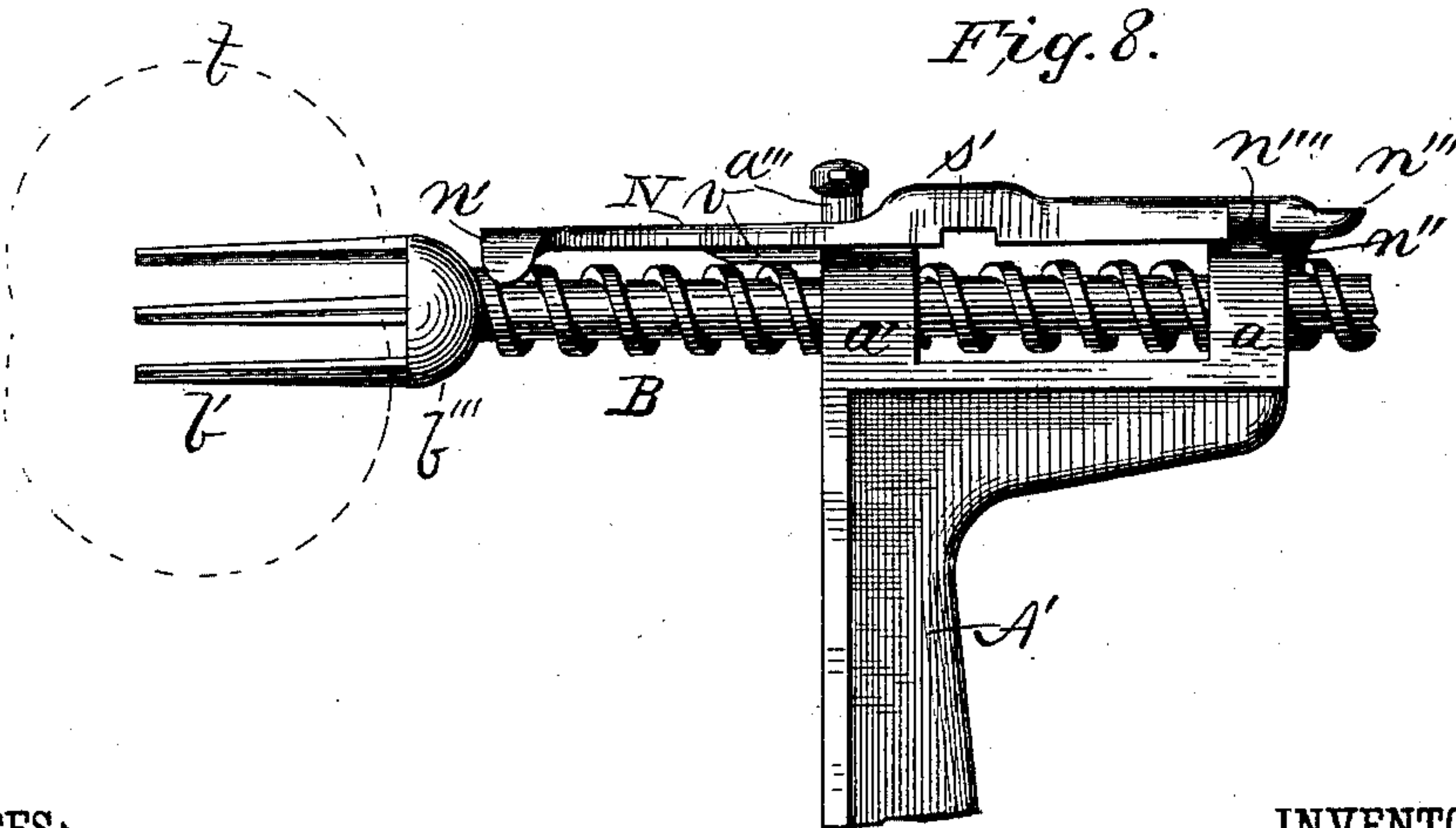
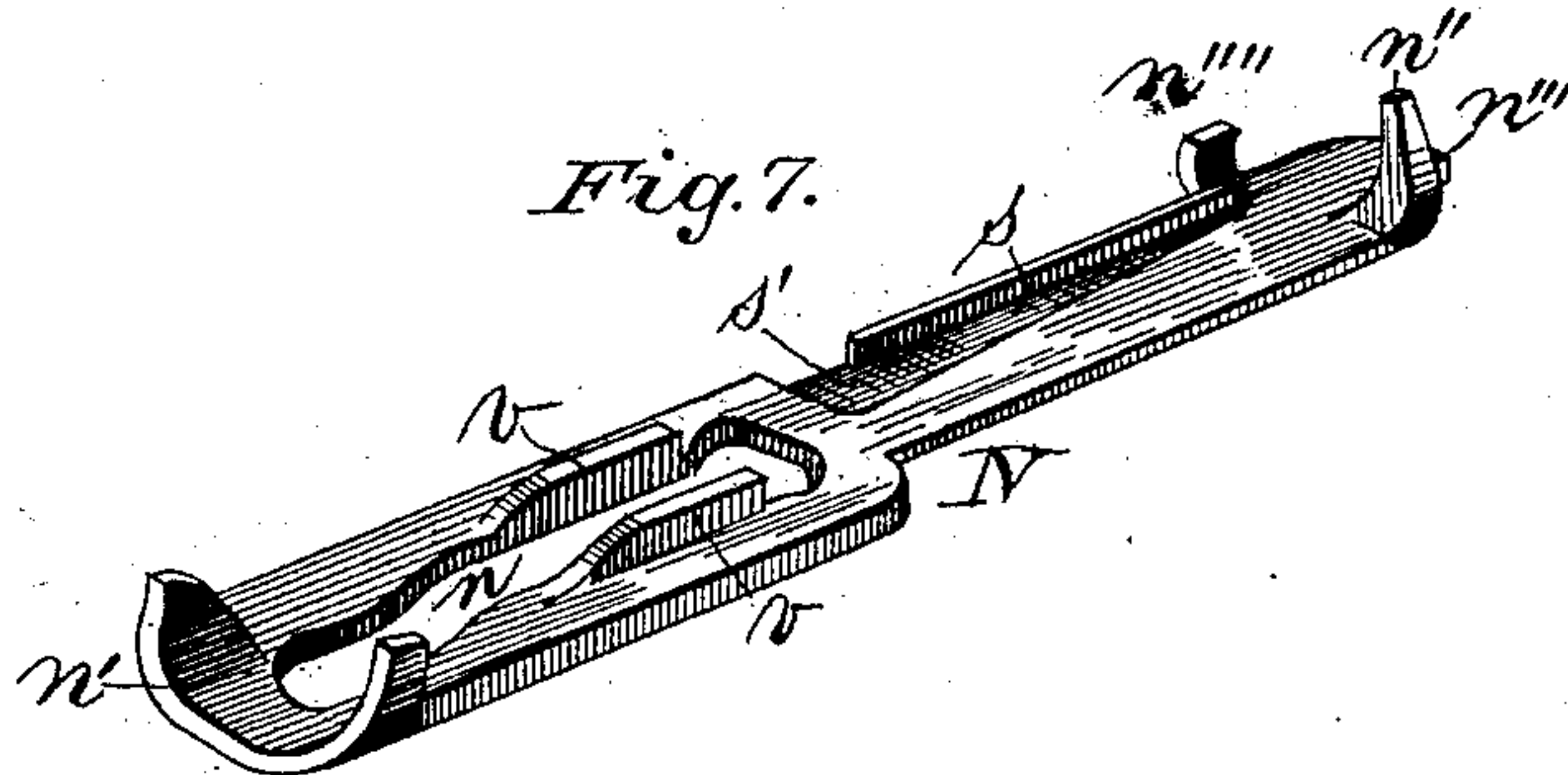
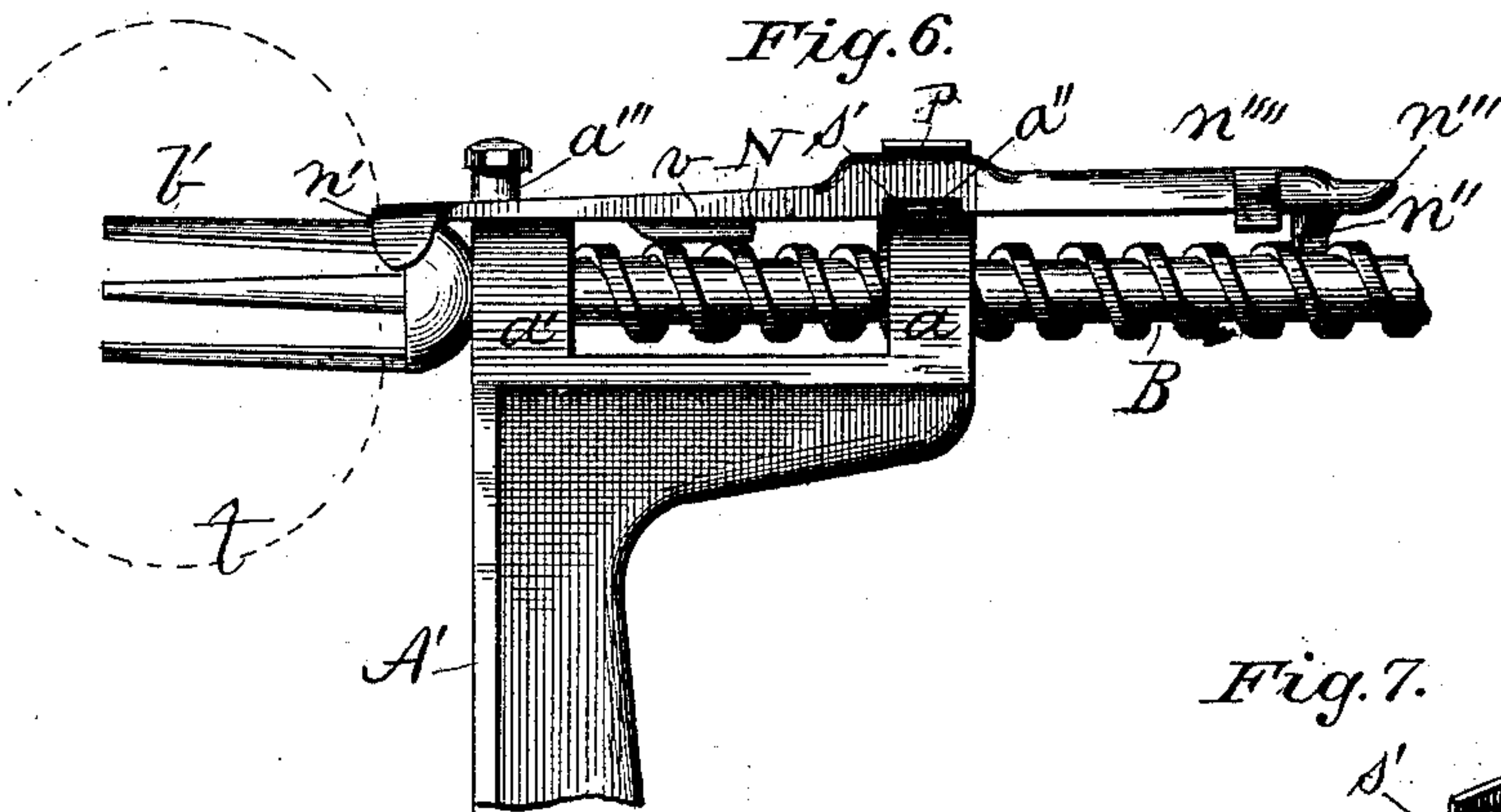
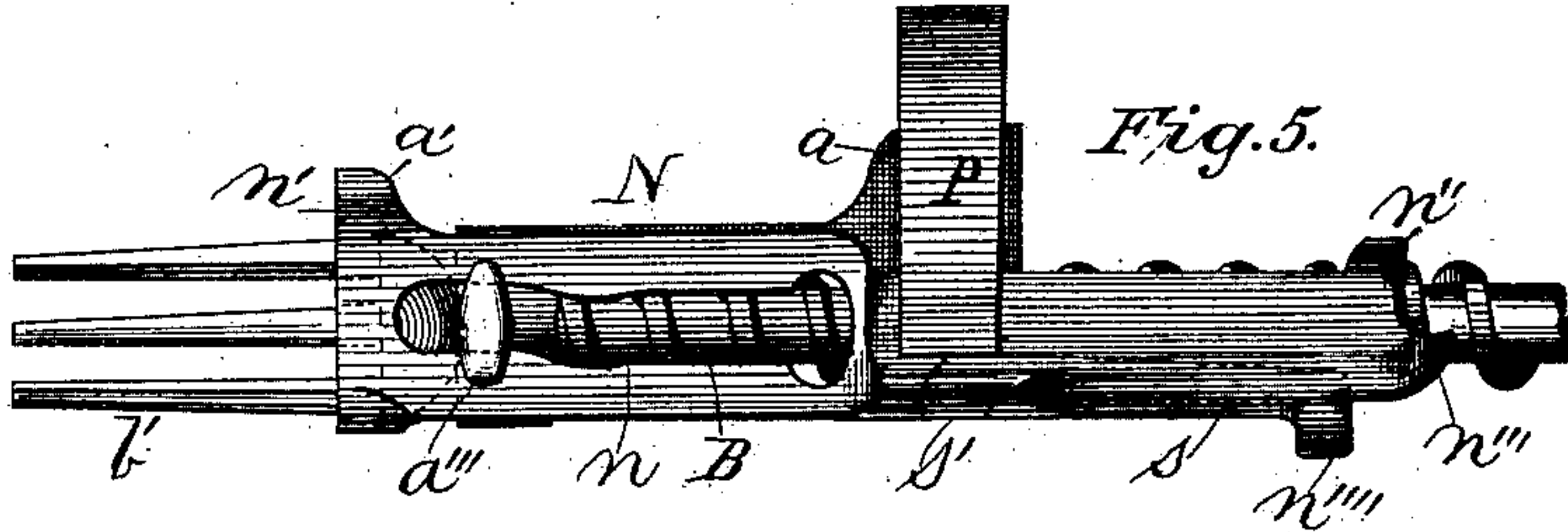
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3 Sheets—Sheet 2.

C. E. HUDSON.  
APPLE PARING MACHINE.

No. 360,527.

Patented Apr. 5, 1887.



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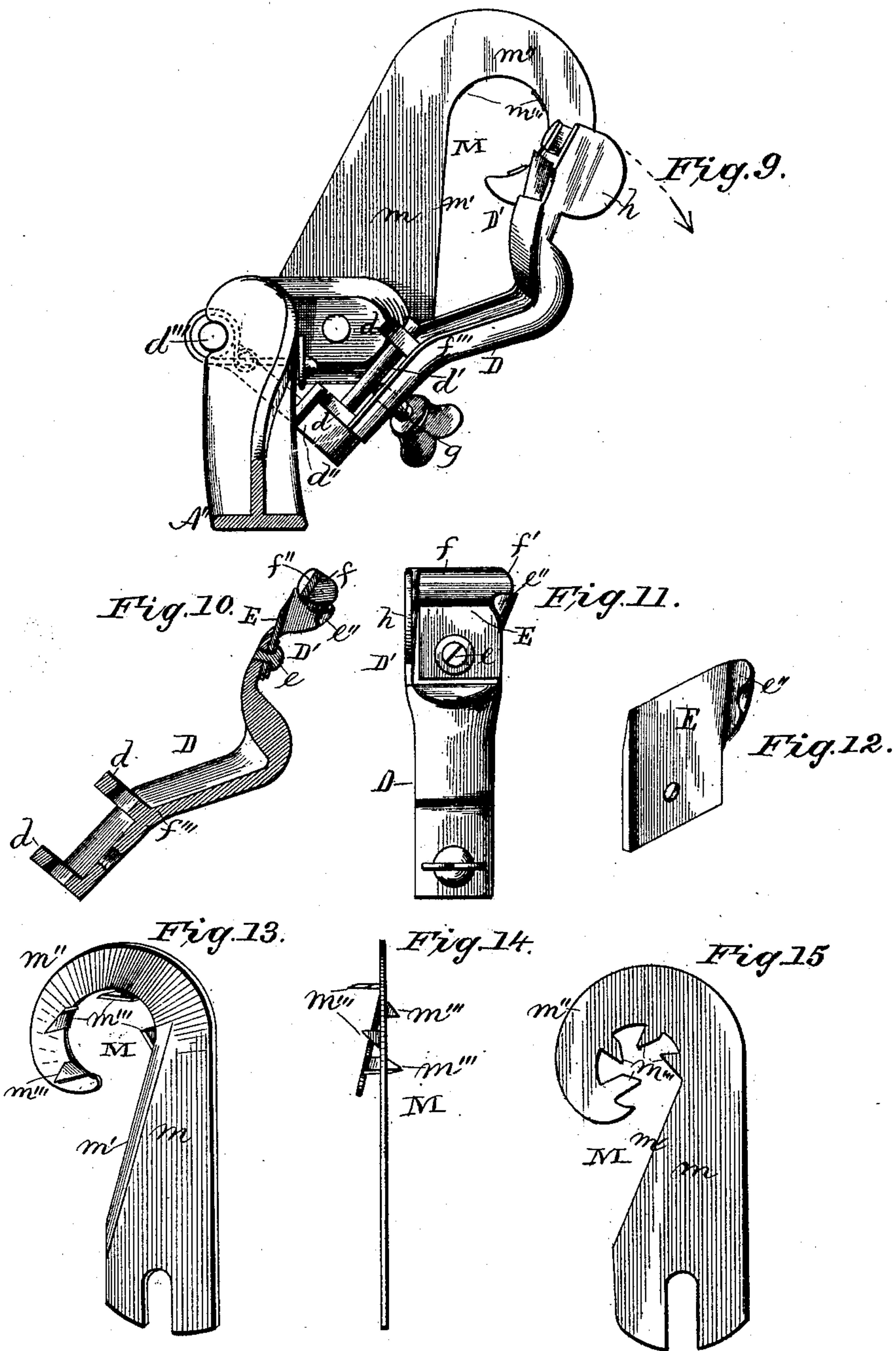
(Model.)

3 Sheets—Sheet 3.

C. E. HUDSON.  
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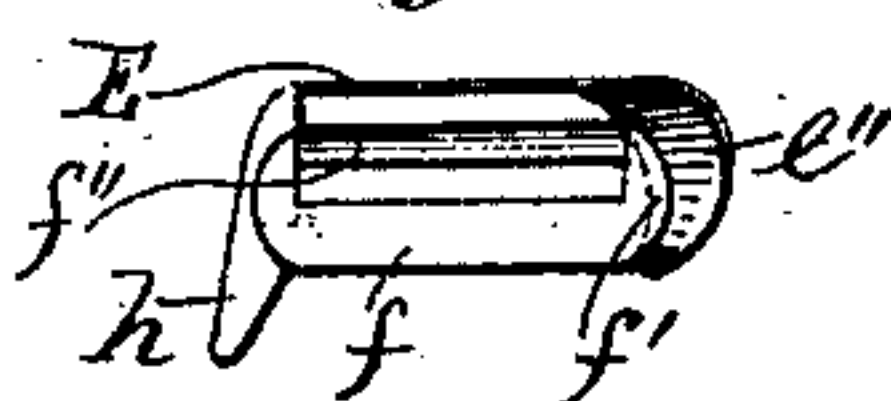
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Fig. 16



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# UNITED STATES PATENT OFFICE

CHARLES E. HUDSON, OF LEOMINSTER, MASSACHUSETTS, ASSIGNOR TO C. E. HUDSON & CO., OF SAME PLACE.

## APPLE-PARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 360,527, dated April 5, 1887.

Application filed August 31, 1885. Serial No. 175,734. (Model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. HUDSON, a citizen of the United States, residing at Leominster, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Apple-Paring Machines, of which the following is a specification.

My invention relates to improvements in apple-paring machines, and while some features of the invention are only adapted for use with that class of such machines in which the fruit is rotated and carried past a spring-actuated yielding paring-knife and fixed coring and slicing knives by a screw-threaded fork-shaft, other features of my invention are adapted for use with various classes of such machines.

In paring-machines of the class above referred to, having a spring-actuated yielding paring-knife, as heretofore constructed, the yielding arm which carries the knife and knife-head has been arranged on the machine in a vertical or nearly vertical position, or in such inclined position toward the fruit on the fork that the fruit in advancing toward the knife to begin the paring operation would sometimes come in contact with the wrong side of the paring-knife head; and to this end my invention consists in locating or arranging the knife-carrying arm on the machine in such an inclined position relatively to the fork-shaft as that said arm will, by its own gravity, swing into such proper normal position after each paring operation as to always present the knife properly to the fruit next presented.

Another object of my invention is to provide means for readily and quickly changing the machine from an apple-parer to a potato-parer, which I accomplish by the use of a paring-knife of peculiar construction and by the use of a knife-carrying arm which is free to swing on its longitudinal axis when used as an apple-parer and can be made rigid when used as a potato-parer.

Another object of my invention is to provide a cheap, easily-made, and effective combined slicing-knife, coring-knife, and core-guard; to which end my invention consists in

a slicing-knife with an extended upper end curved to encircle the core, and bent or twisted in the form of a screw-thread to fit within the spiral cut made by the slicing-knife, and provided with laterally-projecting core-cutting blade and core-guard, which act in cutting the core from the apple by the rotary movement of the apple.

A further feature of my invention consists in a combined core-doffer and segment-nut for advancing the fork-shaft, hereinafter fully described.

My invention further consists in constructions and combinations hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of an ordinary apple-paring machine embodying my invention; Fig. 2, an elevation, partly in section, in line *x x* in Fig. 3; Fig. 3, an enlarged elevation of parts of the machine; Fig. 4, an elevation of the principal parts shown at Fig. 3, but in different relative positions from that shown at Fig. 3; Fig. 5, a top plan of the parts shown at Fig. 4, but in different relative positions from that shown at Fig. 4; Fig. 6, a side elevation of the parts shown at Fig. 5; Fig. 7, a perspective of the core-doffer and segment-nut, shown bottom side upward; Fig. 8, a side elevation of the parts shown at Fig. 6, but in different relative positions from that shown at Fig. 6; Fig. 9, an elevation showing a fragmental part of the frame, the paring-knife, the slicing and coring knives, and adjacent parts; Fig. 10, a sectional elevation of the paring-knife and its supporting arm and head; Fig. 11, a side elevation of the parts shown at Fig. 10; Fig. 12, a perspective of the paring-knife; Fig. 13, a side elevation of the slicing and coring knives; Fig. 14, an elevation of the slicing and coring knives seen edgewise of the slicing-knife; Fig. 15, a plan of the blank from which the combined slicing and coring knife is formed; Fig. 16, an end plan of the paring-knife head.

The frame A of my machine is of ordinary construction, except as hereinafter pointed out, and consists of a standard, A', provided at its upper end with bearings *a a'* for the ordinary screw-threaded fork-shaft, B, with crank *b* and fork *b'*, and with a screw-clamp,



C, by which it is secured to a table or support, C'. From the standard A' projects the base A'', which in this case is different from the ordinary construction, and is curved laterally, as shown at Fig. 1, whereby the knife-carrying arm D is held with its outer end in an overhanging position partially beneath the path of the fork-shaft, as shown at same figure and also at Fig. 9, as hereinafter described. The knife-arm is secured near the outer end of the base A'', so that it (the arm) may yield outwardly from the fork-shaft and turn on its longitudinal axis in the ordinary manner—that is, the knife-arm is provided with lugs *d*, journaled on a shaft, *d'*, which is carried on an arm, *d''*, that is fixed to and oscillates with a shaft, *d'''*, which is held by a spring, *d''''*, which permits the knife arm to yield, as stated, and which returns it to its normal position (shown at Figs. 1 and 9) when it is free.

The paring-knife E is secured to the head D' of the knife-arm by a screw, *e*, in the ordinary manner; and one feature of my invention consists, as shown, in extending a tongue, *e''*, from one side of the paring-blade and curving or bending this tongue, as shown, to form a potato-paring blade. One side of the head D' is extended upwardly, as shown, and has a lateral extension, *f*, above the paring-knife, the outer end, *f'*, of which is rounded to form a paring-guard for the potato-paring blade, and to the side of which is secured a facing or paring guard, *f''*, for the apple-paring blade, of glass or other material—such as porcelain—and which will not be affected by the acid of the fruit nor by wear. The facing *f''* may be secured in place by cementing or by projecting tongues, which may be turned down upon it. A set-screw, *g*, passes through the knife-arm and may be screwed against the shaft *d'* to lock the knife-arm to said shaft, and thus hold the knife-arm from any rotary movement on its longitudinal axis.

When the knife is used for paring apples, the set-screw *g* is turned back to allow the knife-arm free movement on the shaft *d'*, and when the potato-paring knife is used the knife-arm is turned on the shaft *d'*, to bring the potato-paring blade toward the fork-shaft, and is then fixed to the shaft *d'* by the set-screw *g*.

The lower end of the knife-arm being hinged to one side of the path of the fork-shaft, and its upper end extending out to the other side thereof, will place the knife-arm in an overhanging position, whereby the knife-arm will, by gravity, hold the apple-paring knife in proper position for the advancing apple on the fork, and this tendency to assume this position will be aided by the inclined position of the shaft *d'*, (see Fig. 9,) and further aided by the knife-arm being curved outwardly, as at *f'''*, to throw the knife-head still farther backward.

On the side of the knife-head next the fruit as it advances for paring I place an extension

or projecting lug, *h*, which by its weight will still further aid in swinging the paring-knife into proper position; and should the knife-arm fail to swing into proper position when free, as last described, then the advancing apple will strike the lug *h* and force the knife-arm around to bring the apple-paring knife into proper position for action on the advancing fruit. By these means I guard against the difficulties arising from the ordinary apple-paring knife not always swinging automatically into proper position for action on the advancing apple.

M is the combined slicing and coring knife and core-guard, formed of a single plate of steel or other suitable material, secured at its lower end in an ordinary manner to the outer end of the base. The cutting-edge *m'* of the slicing-knife *m* is tangential to the cylindrical core as cut from the apple, and the upper end of the knife or blade *m* is extended to form a curved coring-knife and core-guard supporter, *m''*, which is bent in a spiral form to correspond with the pitch of the thread of the fork-shaft, so that it will fit in the spiral cut made by the slicing-knife. The core cutter and core-guard blades *m'''* are located on the inner edge of the spiral blade *m''*, and project therefrom on either or both of its sides, as shown. The blade *m'''* next the slice-cutter is short and beveled and sharpened from the blade *m''* to its outer end, while each succeeding blade *m'''* is longer than the preceding blade, and need only be beveled and sharpened exterior to or beyond the point of the preceding blade. The series of blades *m'''* will not only act as core-cutters, but will further act as core-guards. The blank from which my combined slicing, coring, and core-guard knife is formed is shown at Fig. 15. The operation of this combined knife need not be any fuller described herein, as it will be evident to any one skilled in this art.

My combined core-doffer and segment-nut N for the fork-shaft feed is constructed and operates as follows: A lug, *a''*, projects upwardly from the standard *a*, and a lug, *a'''*, projects upwardly from the standard *a'*. The lug *a'''* is T-shaped or has a head, as shown. N is a plate with a slot, *n*, lengthwise of itself, through which slot the lug *a'''* passes and the head of which holds the plate N in place, but permits it to slide endwise and be raised and lowered to a limited extent. One end, *n'*, of the plate N is curved and extended to fit over the fruit-carrying fork, and its other end carries a downwardly-projecting lug, *n''*, which serves as a segment-nut to engage the worm of the fork-shaft, as hereinafter described. On the same end of the plate N as is the lug *n''* is also a beveled cam, *n'''*, and a downwardly-projecting lug, *n''''*, to one side of the plate N. A groove, *s*, extends along the under side of the plate N from its end next the cam *n'''* to near the adjacent end of the slot *n*, where it is bent and extends to the outside of the plate



N, and terminates in an open end,  $s'$ . (See full lines at Fig. 7 and dotted lines at Fig. 5.) Cam-shaped lugs  $v$  project downwardly from the plate N at a point near the inner end of the slot  $n$ .

5 P is a spring secured to the standard  $a$  in a manner to exert a constant pressure downwardly and laterally on the plate N.

In describing the operation I will suppose that the machine is properly mounted on a  
10 table, and that the fork-shaft B and core-doffer and segment-nut plate N are in the relative positions shown at Fig. 8 with an apple in place on the fork, as shown by dotted lines  $t$ . In this position the core-doffer is held from  
15 longitudinal movement in one direction by the cams  $v$  resting against the bearing  $a'$ , and in the other direction by the end of the groove  $s$  resting against the lug  $a''$ , and the segment-nut  $n''$  is at the same time held in contact with  
20 the screw-thread of the fork-shaft by the groove  $s$ , lug  $a''$ , and spring P, so that by turning the fork-shaft by the crank the nut  $n''$  will feed the fork-shaft and apple forward to the paring, slicing, and coring knives, where it  
25 will be operated upon, as hereinbefore described, (see Fig. 1,) and when this operation is completed the part  $b''$  of the crank will come in contact with the cam  $n'''$ , and thereby lift and force that end of the plate N over (see  
30 Figs. 1 and 3) until the groove  $s$ , between the lug  $n'''$  and the body of the plate N, rests over the lug  $a''$ , (see Fig. 2,) and thus lift and free the segment-nut  $n''$  from the screw-thread of the shaft B. The fork-shaft B is then free and  
35 may be slid back endwise until it reaches the position shown at Fig. 4, in doing which the enlarged sub-conical-shaped head  $b'''$  of the fork  $b'$  will pass beneath the end of the plate N and lift it, and thereby raise the lugs  
40  $v$  clear of the bearing-head  $a'$ , as shown at same figure. As the fork  $b'$  passes beneath the end  $n'$  of the plate N, as last described, the plate N will push the core of the apple off the fork or doff it. As last described, the  
45 fork is ready for another apple, and in pushing the apple into place on the fork the plate N will be slid backwardly by the apple, as shown at Figs. 5 and 6, until the lugs  $v$  pass the bearing-head  $a'$  and are forced downward  
50 behind said head by the action of the spring P. As the plate N slides backward, as last described, the lug  $a''$  will be disengaged from the lug  $n'''$ , and the lug  $a''$  will bear against the side of the plate N until it coincides in position with the end  $s'$  of the groove  $s$ , when the  
55 spring P will force the plate N over until the groove  $s$  is again over the lug  $a''$  and the segment-nut  $n''$  again in contact with the screw-thread of the shaft B, as shown at same figures. The fork-shaft B may then be slid forward, and its contact with the segment-nut will at the same time carry the plate N forward to the position shown at Fig. 8, in which position the spring P will force the plate N  
60 downwardly until the cam-lugs  $v$  again rest in front of the bearing-head  $a'$ . As the plate

N slides forward, as last described, it will be lifted to pass the lugs  $v$  over the bearing-head  $a'$  by means of the cam-shaped or inclined forward ends of said cams. The machine as last  
70 described is now in position to receive another apple and repeat the operation described.

In paring potatoes the slicing and coring knives are removed from the machine, unless it is desired to slice them as the machine will  
75 do it.

I do not show and do not claim a slicing and coring knife such as shown in the patent to Whittemore, No. 273,418, granted March 6, 1883; but  
80

I claim as my invention—

1. A slicing and coring knife combining in its construction a straight slicing-knife having an extended curved end bent in scroll form and provided with short blades which project  
85 laterally from said extended end to act as core guards and have their sides sharpened, whereby their cutting action to remove the core from the apple is derived from the rotary motion of the apple, substantially as described.  
90

2. A slicing and coring knife combining in its construction a slicing-knife having an extended end bent and curved in scroll form to adapt it to move through and in the spiral cut made by the slicing-knife, and provided with  
95 a series of coring-blades which project laterally from both sides of said extended end to act as core-guards and have beveled and sharpened ends for removing the core from the apple, substantially as described.  
100

3. In a paring-machine, a paring-knife combining in its structure a straighter portion for use in paring apples and similar fruit with a shortly curved or bent side or end for paring  
105 potatoes, substantially as described.

4. In a paring-machine, a paring-knife combining in its structure a straighter portion for paring apples and similar fruit, with a shortly curved or bent side or end for paring potatoes, in combination with a paring guard or gage  
110 having its side constructed or adapted for use with the apple-paring knife and its end constructed and adapted for use with the potato-paring knife, substantially as and for the purpose described.  
115

5. In a paring-machine, in combination with a paring-knife having a straighter side for paring apples and a shortly curved or bent side or end for paring potatoes, an arm carrying said paring-knife, which arm is pivotally  
120 connected with the machine for use with the apple-paring part of the knife and provided with means for locking it for use with the potato-paring part thereof, substantially as described.  
125

6. In a paring-machine, in combination, a paring-knife constructed, substantially as described, to adapt it for paring apples or potatoes, a pivoted arm, and a set-screw for locking said arm, substantially as and for the purpose specified.  
130

7. In combination, the pivoted arm D, the



set-screw for locking it, the combined apple and potato paring knife, and the paring guard or gage, substantially as described.

5 8. In an apple-paring machine, in combination with the paring-knife, knife-head, and paring guard or gage, a facing of glass secured to the paring-gage, substantially as and for the purpose specified.

10 9. In an apple-paring machine, in combination, a frame, an apple-carrying fork and its shaft, a pivoted arm carrying the paring-knife and its supporting-head, and an extension or projection, *h*, from the knife-head, substantially as described.

15 10. In an apple-paring machine, the combination, with a supporting-frame having a fork and its carrying shaft, of a knife-arm, *D*, projecting obliquely upward and away from the frame and having lugs *d*, an oscillating shaft, 20 *d'*, journaled in the frame, an arm, *d''*, and projecting obliquely downward from said shaft *d'''* and having a shaft, *d''*, projecting upwardly from the lower end of said arm into the lugs *d*, and a spring, *d''''*, substantially as described.

25 11. In an apple-paring machine, in combination with a supporting-frame having bearing-heads *a a'*, having lugs *a'' a'''*, respectively,

and a screw-threaded fork-shaft having a tappet or projection, *b'''*, a core-doffer plate, *N*, having a slot, *n*, cams *v*, groove *s*, lugs *n''* 30 *n'''*, and cam *n'''*, and spring *P*, substantially as described.

12. In an apple-paring machine, in combination with the frame and the screw-threaded fork-shaft, the plate *N*, having slot *n* and cam- 35 lugs *v*, and the bearing-head *a'*, having lug *a'''*, substantially as and for the purpose specified.

13. In an apple-paring machine, in combination with the frame having bearing-heads *a a'*, with lugs *a'' a'''*, respectively, and a screw- 40 threaded fork-carrying shaft, the sliding core-doffer and segment-nut plate *N*, constructed and adapted to operate, substantially as and for the purpose specified.

14. In a fruit-paring machine, in combina- 45 tion, a paring-knife, knife-head, paring guard or gage, and a glass protective facing, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES E. HUDSON.

Witnesses:

CHAS. A. JOSLIN,

D. C. NICKERSON.