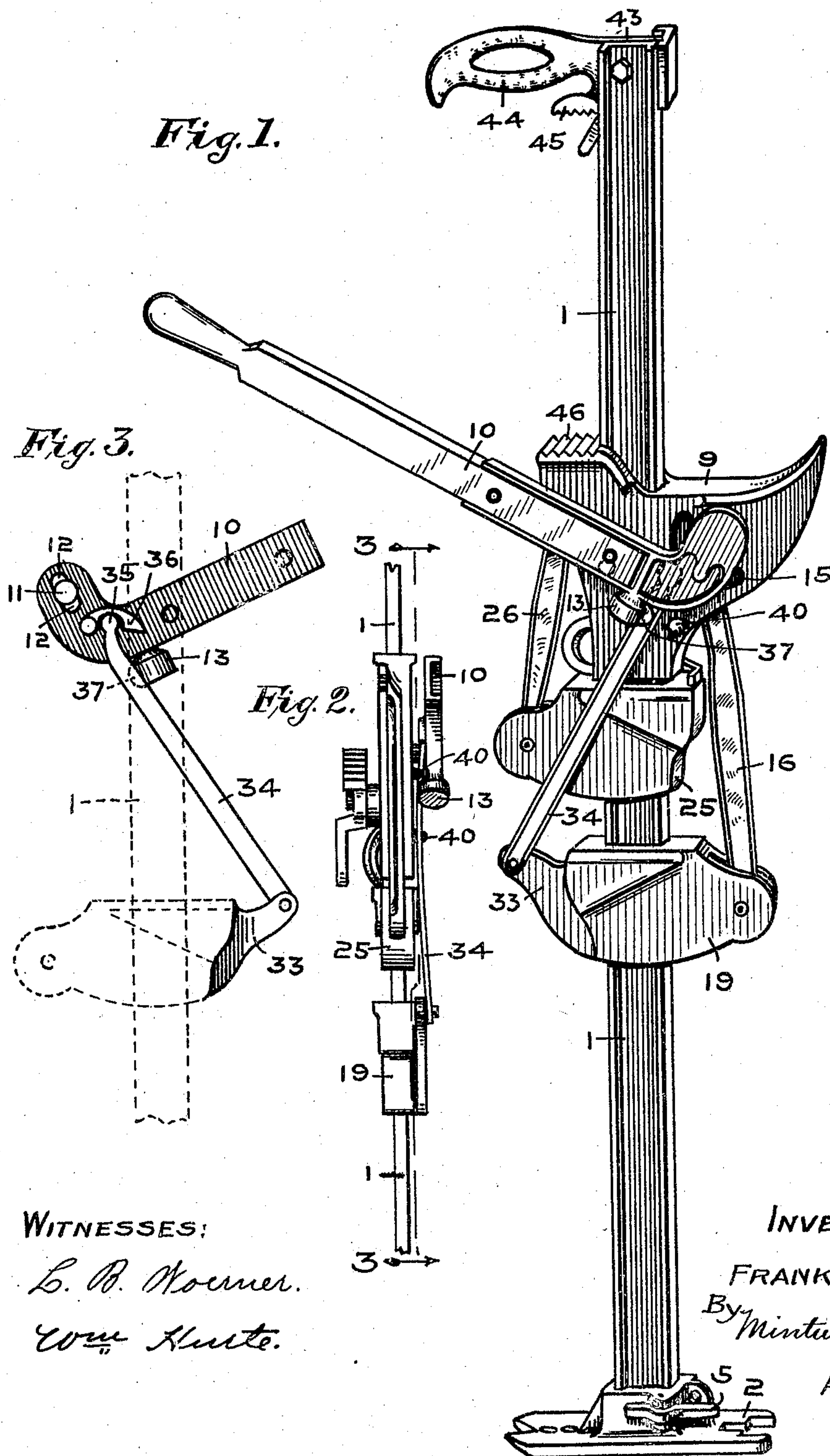


No. 815,916.

PATENTED MAR. 20, 1906.

F. E. FOOR.
COMBINATION TOOL.
APPLICATION FILED NOV. 21, 1905.

3 SHEETS—SHEET 1.



WITNESSES:

L. B. Kerner.

Wm. H. Kute.

INVENTOR,

FRANK E. FOOR,

By Minturn & Werner,

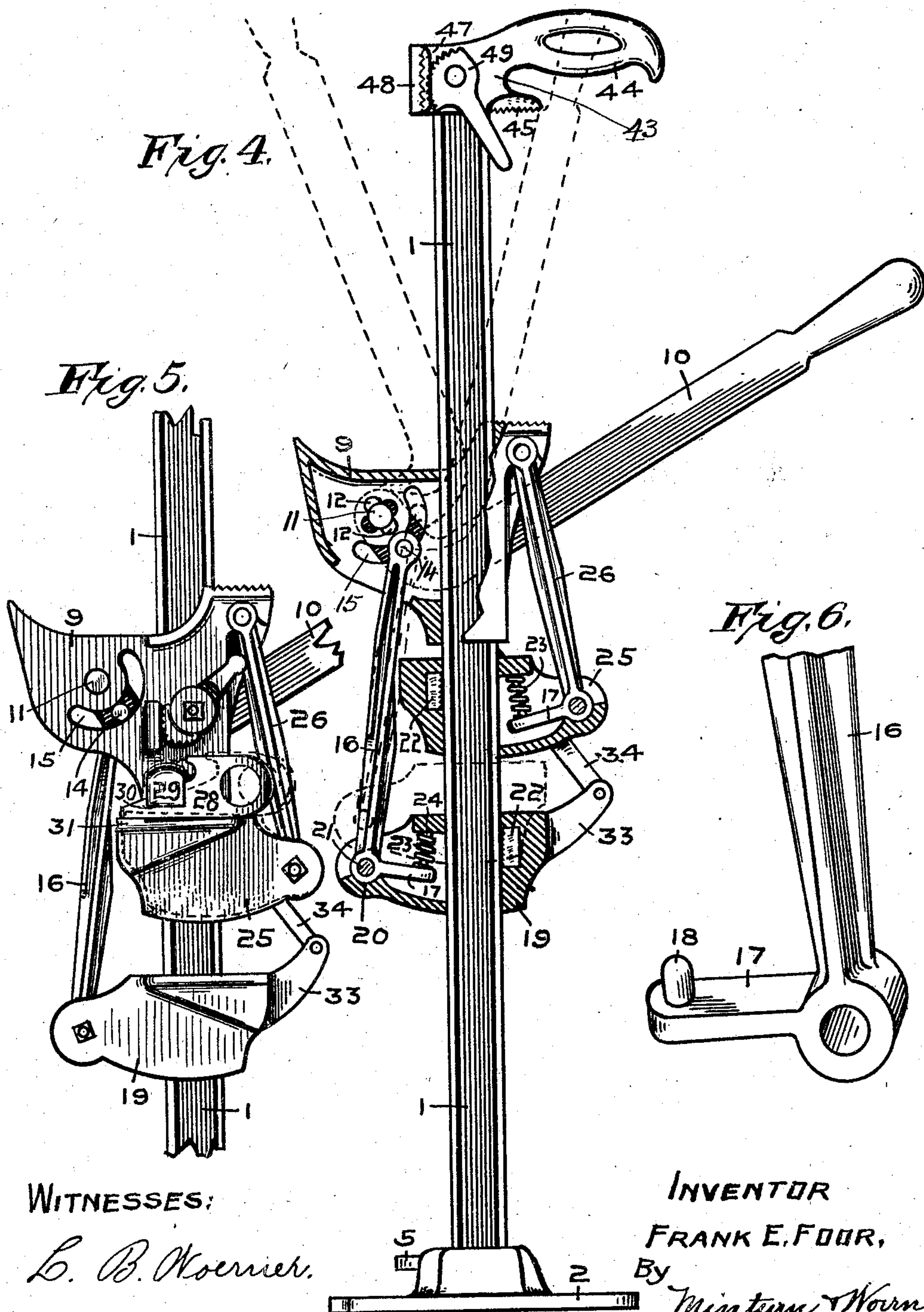
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3 SHEETS—SHEET 2.



WITNESSES:

L. B. Koerner.

Wm. Hurte.

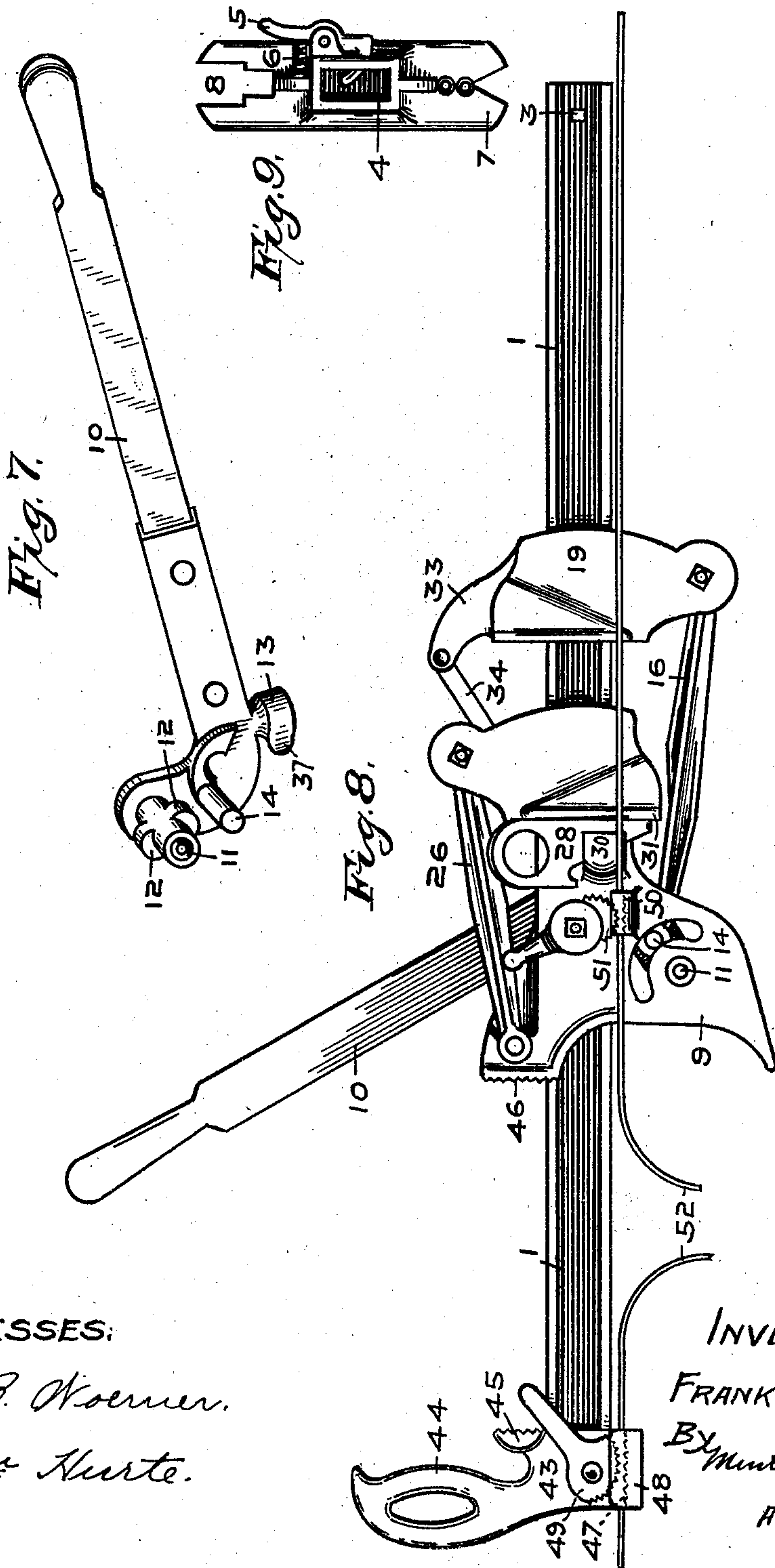
INVENTOR
FRANK E. FOOR,
By Minturn Warner,
ATTORNEYS.

No. 815,916.

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3 SHEETS—SHEET 3.



WITNESSES:

L. B. Koerner.

Wm. Hurte.

INVENTOR

FRANKE. FOOR,

By Muntz & Warner,

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FRANK E. FOOR, OF INDIANAPOLIS, INDIANA.

COMBINATION-TOOL.

No. 815,916.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed November 21, 1905. Serial No. 288,360.

To all whom it may concern:

Be it known that I, FRANK E. FOOR, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Combination-Tools, of which the following is a specification.

This invention relates to improvements in a tool which is particularly desirable on a farm for pulling posts, stretching fence-wires, raising light buildings, leveling threshing-machines and portable engines, lifting heavy machinery—such as hay-balers, mowers, and binders—and for elevating the axles of wagons and other vehicles for the removal of a wheel.

The object of the invention is to provide a strong, simple, and inexpensive tool which is adapted for the above uses and also to provide a tool which can be used as a clamp and vise and as a means for holding the ends of severed wires and for bringing them together for convenient splicing.

A further object is to provide a tool which can be assembled and dismantled readily, so some of its parts can be used separately from the other parts.

The object also is to provide means for unlocking the runners or clamps without danger of injury to the fingers or hand of the operator.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a tool embodying the special features of my invention. Fig. 2 is a detail in edge view of the main bar of the tool. Fig. 3 is a section on the line 3 3 of Fig. 2 looking in the direction of the arrow. Fig. 4 is a view in side elevation and partial section of the tool looking at the opposite side from that shown in Fig. 1. Fig. 5 is a detail of same, showing the parts in full which were shown in section in Fig. 4. Fig. 6 is a detail in perspective view of the lower end of the lifting-bar. Fig. 7 is a perspective view of the operating-lever, showing more clearly the construction of the inner end and face of the lever. Fig. 8 is a side view showing the adaptation of the tool for splicing wires, and Fig. 9 is a top view of the base or foot piece removed.

Like characters of reference indicate like parts throughout the several views of the drawings.

1 represents the main bar of my tool, and 2

is the base, which supports the bar 1 when the invention is used as a jack. This base is removably secured to the bar and is taken off to lighten the tool and render it more convenient when used as a wire-stretcher, as shown in Fig. 8. The end of the bar 1 is provided with the perforation 3, (see Fig. 8,) and this perforated end is inserted in the socket 4. (See Fig. 9.) The pivoted lever 5 has a hooked end which passes through the wall surrounding the socket and entering the perforation 3 fastens the base to the bar. The lever 5 is pressed by the spring 6 in a direction to force the hook into the socket. The base-plate 2 has the claw end 7 for pulling staples and nails, and at its opposite end it has the notches 8 to receive bolt-nuts, thereby adapting the base when removed to be used as a wrench, and the notches will be particularly adapted as to size to fit the nuts of the tool itself, thereby providing a nut-wrench for the tool which is always at hand for convenient use.

9 is the movable hook-head of my device, preferably made out of iron or cast-steel, formed with two parallel side plates, between which the bar 1 is inserted in the manner as clearly shown in Fig. 4.

10 is an operating-lever having a handle at one end and its opposite end bent approximately at right angles and provided with a journal member or pin 11. The body of this pin is cylindrical; but midway of its length it has the two diametrically opposite lugs 12. This pin is inserted through suitable openings in the two plates of the head 9, the opening through the plate next to the lever being shaped to allow the lugs 12 to pass through when the lever is in the position shown by the dotted lines, Fig. 4, and when the lever is lowered into working positions these lugs form a lock to prevent the longitudinal displacement of the pin 11. This construction is desirable, for the reason that it provides an easy means for disengaging the lever 10 from the remainder of the tool when it is desired to use the lever 10 as a hammer, for which it is adapted by the addition of the driving-head 13. The lever 10 has a second pin 14 on the same side of the lever and parallel with the pin 11. The plates of the head 9 are provided with corresponding arcuate slots 15, concentric with the openings for the pin 11, and through these slots the pin 14 on the lever 10 is passed in the manner as shown in the drawings. Mounted on the pin 14 is the pitman 16. The pitman 16 has an eye at its

lower end similar to the one which receives the pin 11, and projecting laterally from the lower end of the pitman is the arm 17, having the lug or pin 18 on its upper side.

19 is a runner of cast metal which is cored out to permit of the introduction into its interior of the lower end of the pitman 16 and its arm 17. A socket 20 is formed in the runner to receive the correspondingly-rounded end of the pitman, and the latter is secured in the runner by means of the bolt 21; but because of the close fit of the pitman in the socket of the runner the lifting strain is taken off of the bolt, which is an important element of strength and durability in the construction of my tool.

22 is a bite member of hardened steel, which is inserted in a suitably-formed pocket in the runner on the opposite side of the bar 1 from the pitman 16. This bite member has downwardly-sloping teeth contacting with the bar 1, and the weight, which is being elevated by the head 9, causes the member 22 to firmly engage the bar 1, except when it is released by an upward pull of the pitman 16, which raises that end of the runner to which the pitman is attached, thereby throwing the opposite end of the runner carrying the member 22 away from and out of engagement with the bar 1. A spring 23, seated on the pin 18 of the arm 17, presses up against the top of the runner, so as to constantly elevate the end of the runner which carries the bite member 22, thereby keeping the latter in constant close contact with the bar 1. The spring will be held in place by a pin 24 entering its coils from the top of the runner.

25 is a second runner of the same construction as the runner 19, mounted on the bar 1 between the head 9 and the runner 19; but it is reversed in position, so as to bring its bite member 22 into contact with the opposite edge of the bar 1, and the opposite end of the runner 25 from that in which the bite member is located is connected by means of the pitman 26 with an extension of the head 9 on that side of the bar 1. The rounded ends of the pitman 26 bear in suitable sockets in both head 9 and runner 25, so as to relieve the bolts which secure them of strain. The pitman 26 has the same kind of an arm 17, with a pin 18 to engage a spring 23, which spring is held by a pin at the top of the runner and presses against the top of the runner in the same manner and for the same purposes as described for the runner 19.

The operation of my device as thus far described is as follows: When the operating-lever 10 (see Fig. 4) is raised to the position shown in dotted lines at the right of bar 1, the lower runner is raised to the position shown in dotted lines, and the weight of this runner and the weight of the head 9 and whatever weight may be resting on the head

will be sustained by the middle runner 25. Then when the lever 10 is lowered, say, to the position shown in full lines the weight is immediately transferred to the lower runner 19, causing the latter to grip the bar 1, and the downward movement of the operating-lever 10 causes the head 9 to move up on the bar 1. This upward movement of the head loosens and releases the grip of the runner 25 and draws it up with the head 9. A second raising of the lever 10 throws the weight again on the runner 25 at its higher position, and then the runner 19 is brought up to a higher position on the bar 1, and the step-by-step movement progresses in this manner. It will thus be seen that the bar 1 is gripped upon alternate opposite sides, thereby making the strain more uniform and insuring greater durability and strength to the tool. By pressing down on the end of the runner in which the bite member 22 is located the runner swinging on its pivotal connection with the pitman at its opposite end will swing into a position that will release the bite member from contact with the bar 1.

The runner 25 is released, as above described, by means of a sliding wedge 28, which works between the top of the runner 25 and a lug 29, integral with the side of the head 9. Lateral displacement of the wedge is prevented by the flange 30 from lug 29. The edge of the runner 25 which contacts with the wedge has the projection 31 over the end of the runner to be depressed, so as to deliver the pressure from the wedge particularly at that part of the runner. The wide end of the wedge has a perforation, as shown, for easier grasping in making adjustments.

By the depression of the end of the runner holding the bite member the runner is disengaged from the bar 1 and the weight of the head and load on the head is transferred to the runner 19.

When the wedge 28 is brought into contact with the runner 25, the operating-lever 10 must be held by the operator. With the lever 10 in the position shown in full lines in Fig. 4 the lever may be gradually raised to the position shown in dotted lines in said figure, which causes the head 9 to be lowered. The wedge 28 is next moved to release the runner 25, and then by pressing down on that end of the runner 19 which is above the bite member 22 the runner 19 is thrown out of engagement with the bar 1, and the weight of the head 9 and its load is transferred to the runner 25 and is supported by said runner. The lever 10, being in the position shown in dotted lines to the right of bar 1 in Fig. 4, is next lowered, and the runner 19 is moved down on the bar 1 by the lowering of said lever 10. This forms a step-by-step movement, by means of which the load on the jack is lowered. The downward pressure on the end of runner 19 required to release it from

the runner may be made by pressing thereon with the fingers of the person operating the jack; but there is danger of getting the fingers mashed between that runner and the one above it. In order to avoid this danger of personal injury and also to operate this part of the jack entirely from the handle, thereby making it more convenient than if pressed down with the fingers, I provide the device which is best shown in Figs. 1, 2, and 3, in which 33 is an integral extension from the runner 19 and 34 a link-bar connecting the end of the extension 33 with the lever 10. The upper end of the bar 34 terminates in the circular head 35, which is introduced between the head 9 and the lever 10. This bar is made of spring metal which is curved inwardly at the middle, as best shown in Fig. 2, and bears against the runner 25, so as to cause its upper end to press out firmly against the lever 10. The lever 10 has the curved flange 36, the concave lower side of which forms a seat in which the circular upper end of the bar 34 has its bearing during the times when it is desired to press down on the end of the lower runner 19. When it is not desired that the bar be in engagement with the lever-flange 36, the upper end of the bar will be pressed back by lowering the handle 10 until a wedge extension 37 from the hammer-head 13 has forced the bar away from the lever. After the lever 10 has thus been moved so the hammer-head 13 is below the bar 34 the lever can be operated to work the jack without re-engagement of the bar with the curved flange except by raising the lever abnormally high. In the last position the end of the bar will again enter the concave bend of the flange and will be capable of depressing the runner by the lowering of the lever. The lateral movement of the bar 34 is limited by the lugs 40 and 40 from the side of the head 9.

A plate 43 is secured to the upper end of the bar 1, and projecting laterally from the plate is a handle 44. The lower portion of this plate 43 is provided with a rigid vise or jaw 45 to cooperate with a corresponding jaw 46 on the rear part of the head 9. Extending longitudinally of the bar 1 across the plate 43 is a toothed bar 47, which is overlapped by the plate 48, and pivotally secured to the plate 43 is a cam-segment lever 49, toothed upon its segmental portion to admit of firm clamping and engagement with a wire introduced between the toothed bar 47 and said cam-segment lever under the flange 48.

The head 9 has the toothed extension 50, which cooperates with a cam-segment lever 51, pivoted to the head 9 adjacent to the toothed extension 50. These parts provide means for clamping a wire to the head 9 in the manner as shown in Fig. 8, in which the wire is shown at 52. Fig. 8 represents my device as used for a wire-stretcher and shows one end of a wire held by the clamp on plate

43 and the end of the second wire held by the clamp on the head 9. With my device the ends of the wires may be drawn together and united by twisting while being held by my machine.

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

1. In a tool of the class described, the combination of a main bar, an elevating-head movably mounted upon said bar said head having two parallel plates between which the bar is located said plates having opposite perforations to receive the journal-pin of a hand-lever and said plates having arcuate slots concentric with the said perforations, a hand-lever having a journal-pin for insertion through the perforations of the head, said pin having lateral lugs to prevent withdrawal of the pin from the head except in a certain elevation of the lever, a pair of runners movably mounted upon said bar below the head, a pitman connecting the head with one of the said runners, a bite member in the opposite end of said runner to engage said bar, a second pitman on the opposite side of the bar from the first pitman connecting the lever with an end of the second runner, and a bite member in the opposite end of the second runner to engage said bar.

2. In a combination-tool of the class described, the combination of a main bar, an elevating-head having two parallel plates between which the bar is placed said plates having perforations opposite each other and arcuate slots concentric with said perforations, a hand-lever having a journal-pin to enter the perforations of said head and a second pin to enter the arcuate slots, a pair of runners movably mounted upon said bar below the head, a pitman connecting the head with one of said runners, a bite member in the opposite end of said runner to engage said bar, a second pitman on the opposite side of the bar from the first pitman connecting the lever with an end of the second runner, a bite member in the opposite end of the second runner to engage said bar, and a sliding wedge resting upon the middle runner between said runner and a projecting portion of the elevating-head and adapted by being pressed between the head and runner to press that end of the runner having the bite member away from the head.

3. In a tool of the class described, the combination of a main bar, an elevating-head movably mounted upon said bar, a pair of runners movably mounted one below the other and both below the head, on said bar, a lever pivotally connected with the head, a pitman connecting the lower runner with the lever, a second pitman connecting the middle runner with the head said pitmen being on opposite sides of the bar, bite members in the ends of the runners opposite the ends of at-

tachment with the runners of their respective pitmen and means connecting the lower runner with the lever whereby said runner can be disengaged from the bar by manipulating the lever.

4. In a tool of the class described, the combination of a main bar, an elevating-head movably mounted upon said bar, a pair of runners movably mounted one below the other on said bar below the head, a lever pivotally connected with the head, a pitman connecting the lower runner with the lever, a second pitman connecting the middle runner with the head, said pitmen being on opposite sides of the bar, bite members in the ends of the runners opposite their respective pitmen, means connecting the lower runner with said lever whereby said runner can be disengaged from the bar by a manipulation of the lever, and means also by the manipulation of said lever for disengaging said connecting means.

5. In a tool of the class described, a bar, a head mounted on the bar and adjustable longitudinally thereof, a lever pivotally mounted on the side of the head, a pair of runners

mounted below the head on the bar, one below the other, a pitman connecting the lower runner with said lever, a second pitman on the opposite side of the bar from the first, connecting the second or middle runner with the head, a spring-bar pivoted at its lower end to the opposite end of the lower runner from its pitman and extending up between the said lever and head, said bar having its upper portion bent outwardly and terminating with a rounded head, a concave notch on the inner side of the lever to engage the rounded end of the spring-bar, and a wedge carried by the lower part of the lever to press the spring-bar out of engagement with the concave notch at certain positions of the lever.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 11th day of November, A. D. 1905.

FRANK E. FOOR. [L. s.]

Witnesses:

J. A. MINTURN,
F. W. WOERNER.