

(No Model.)

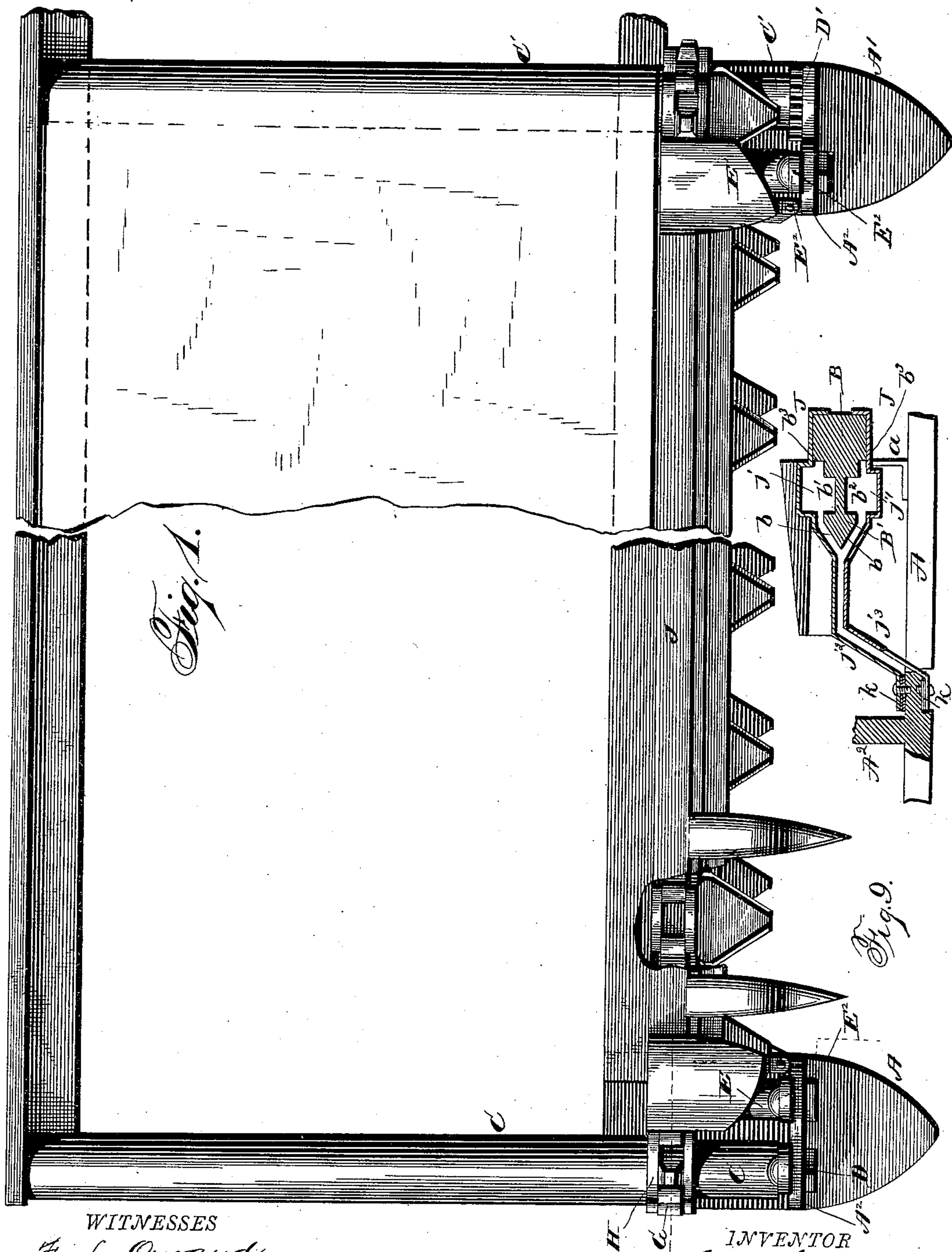
2 Sheets—Sheet 1.

S. S. TURNER.

ENDLESS CHAIN SICKLE FOR MOWERS AND REAPERS.

No. 352,963.

Patented Nov. 23, 1886.



WITNESSES
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Fig. 2.

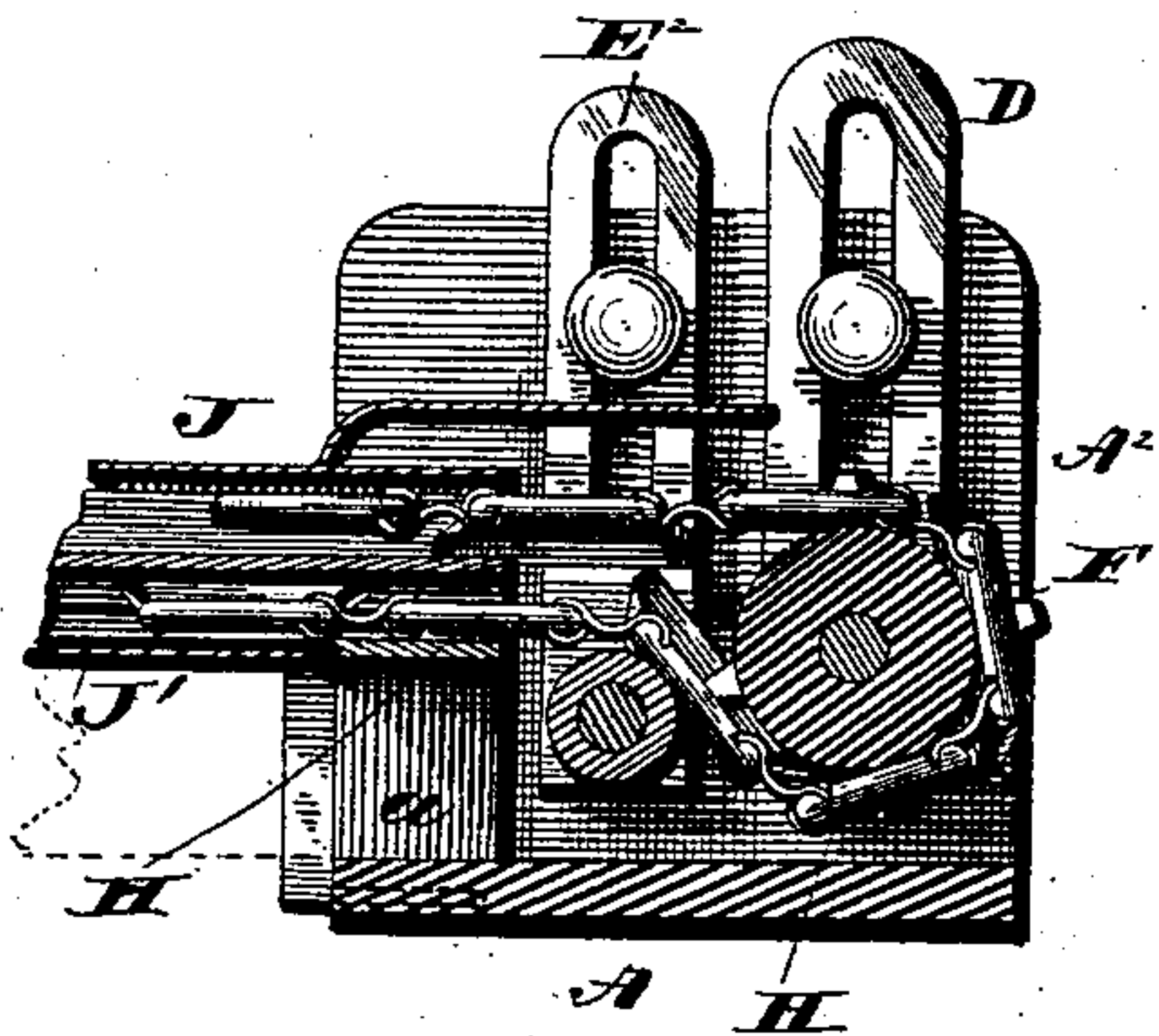


Fig. 3.

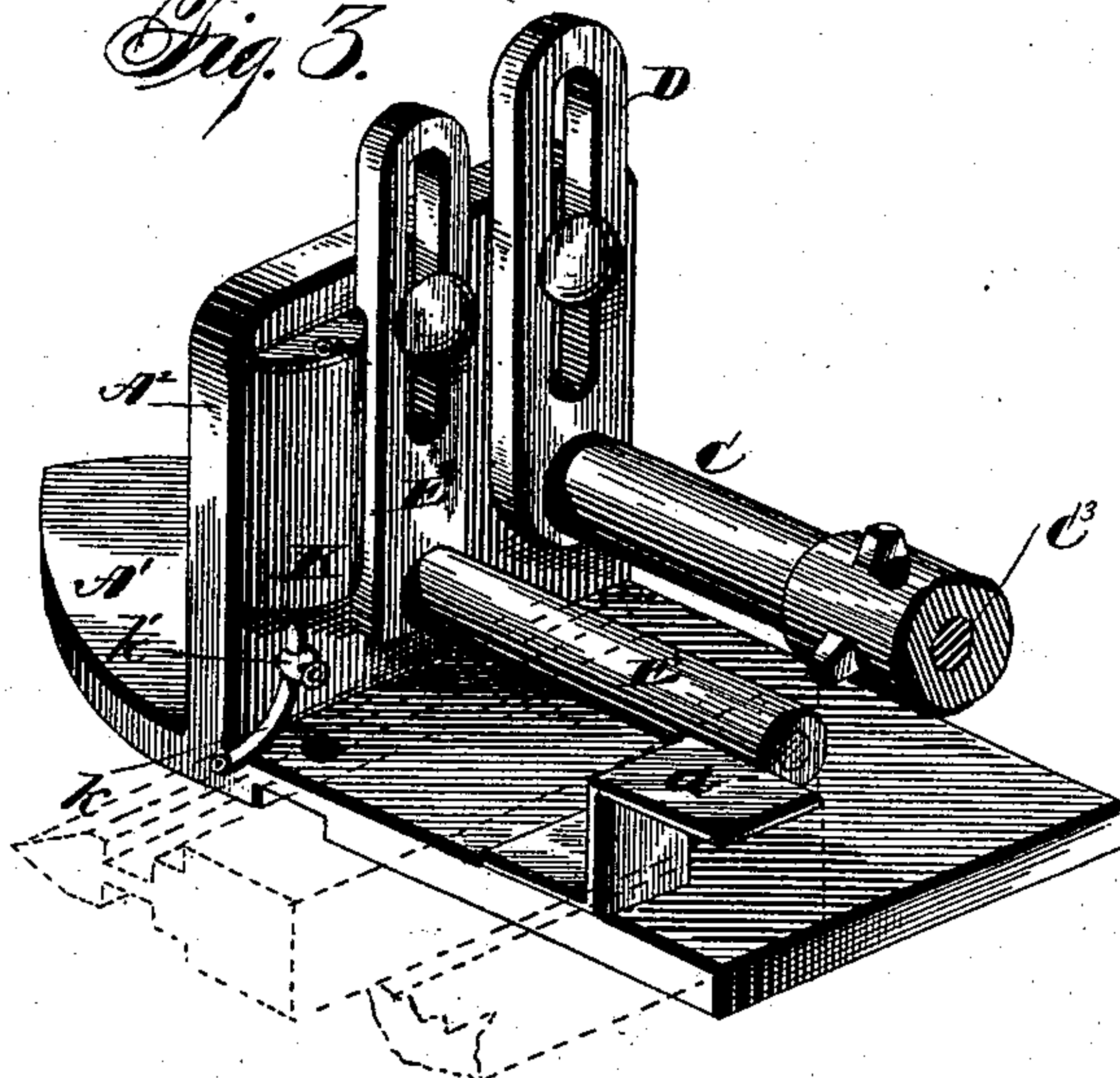


Fig. 4.

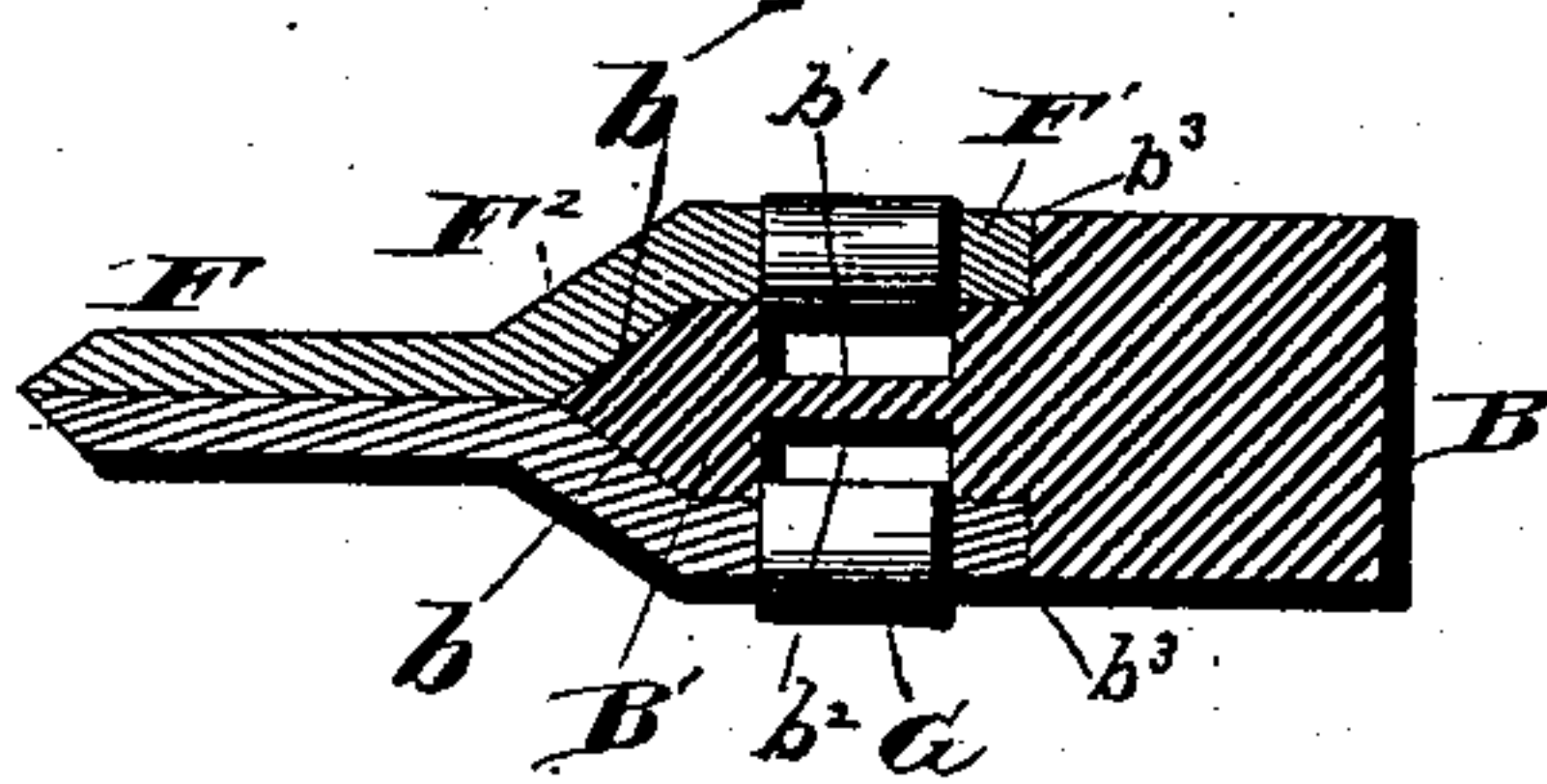


Fig. 6.

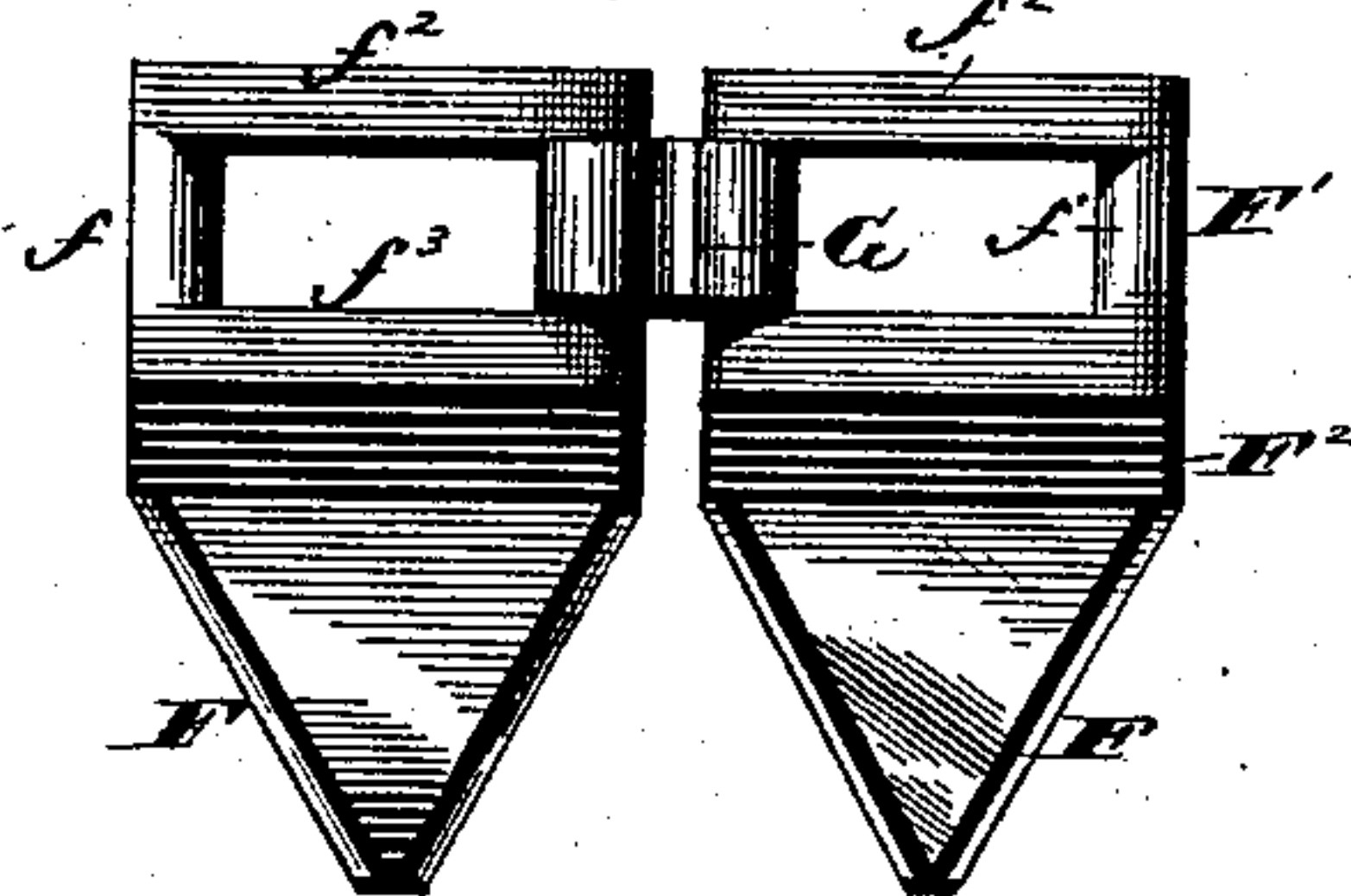


Fig. 5.

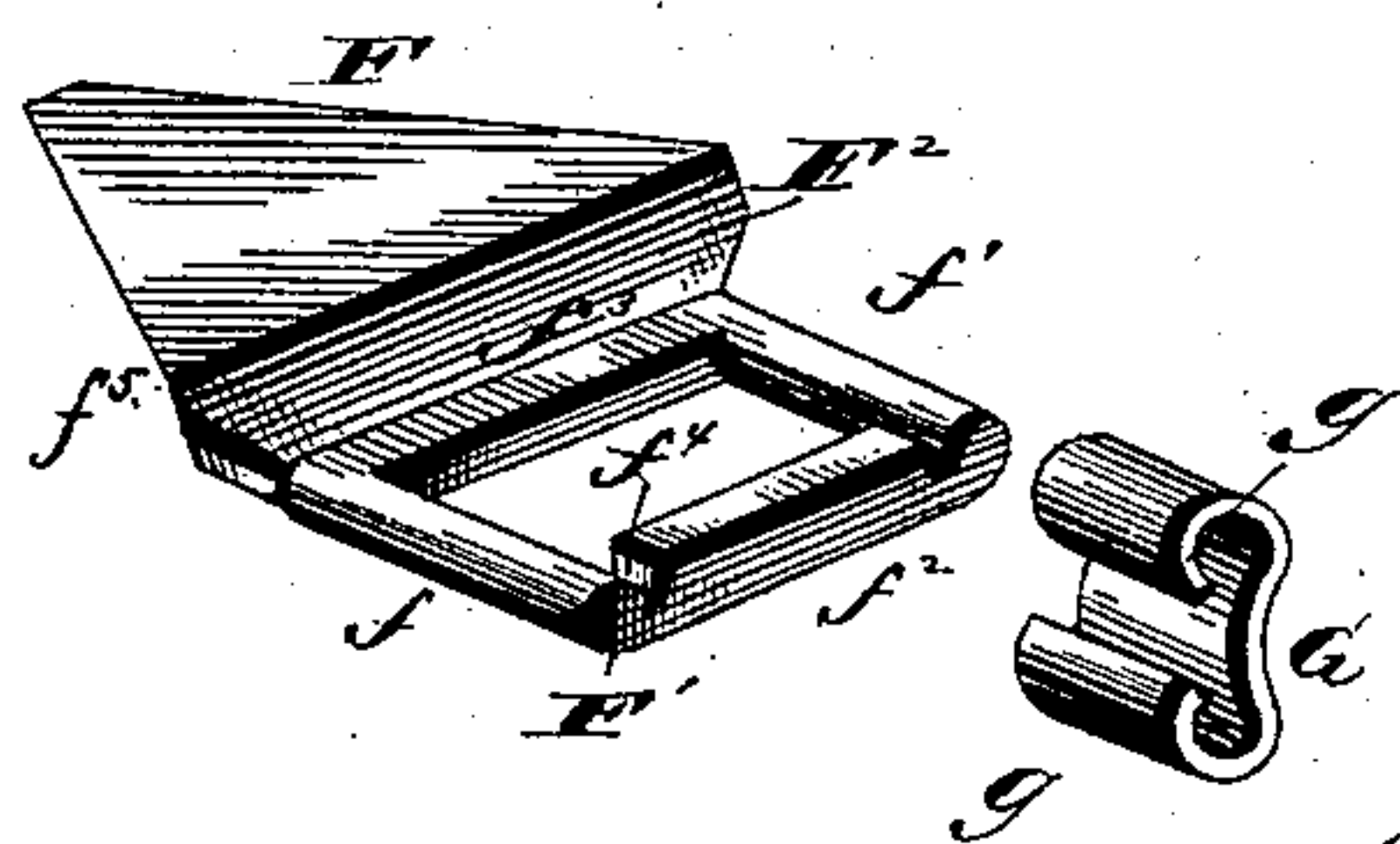


Fig. 7.

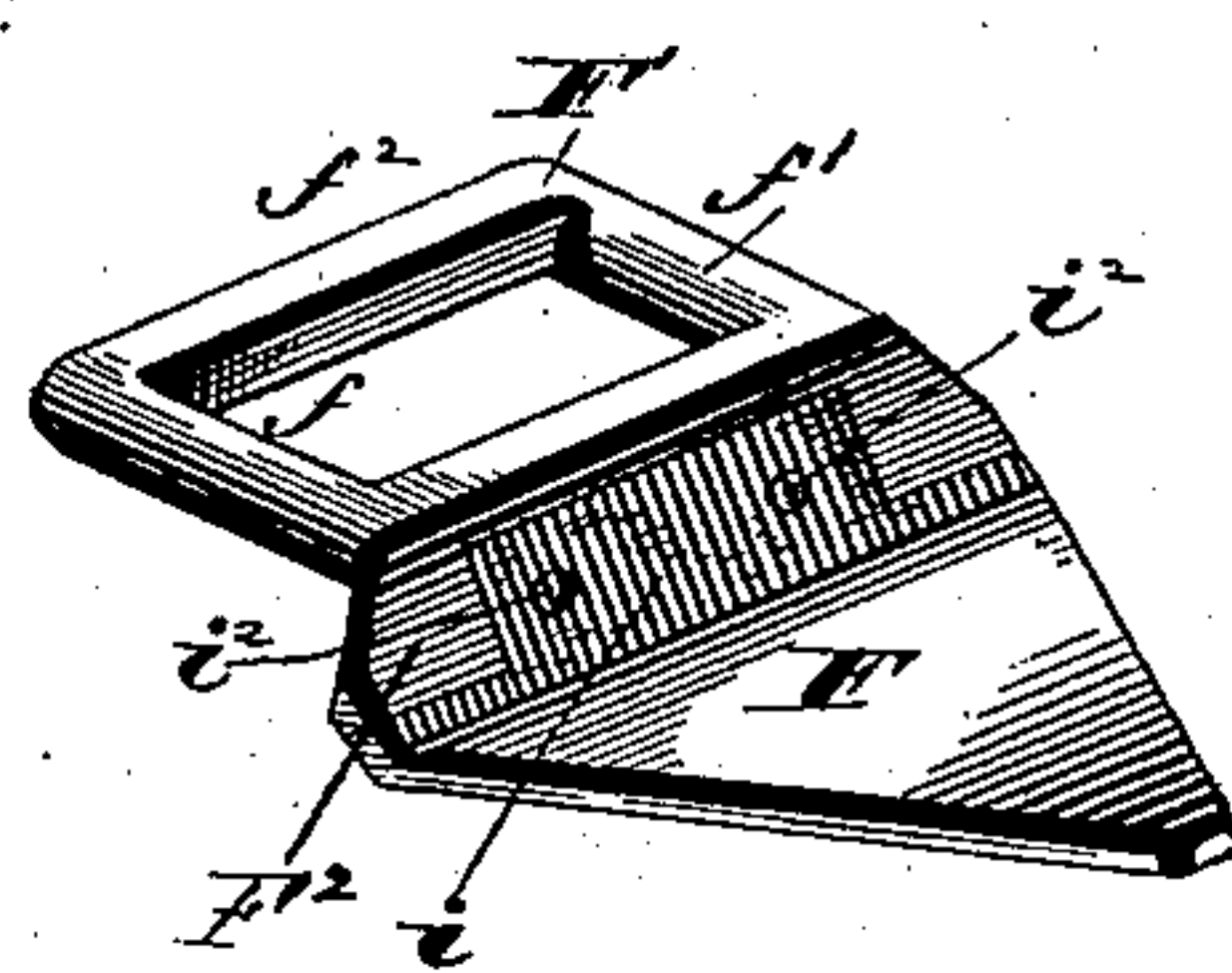
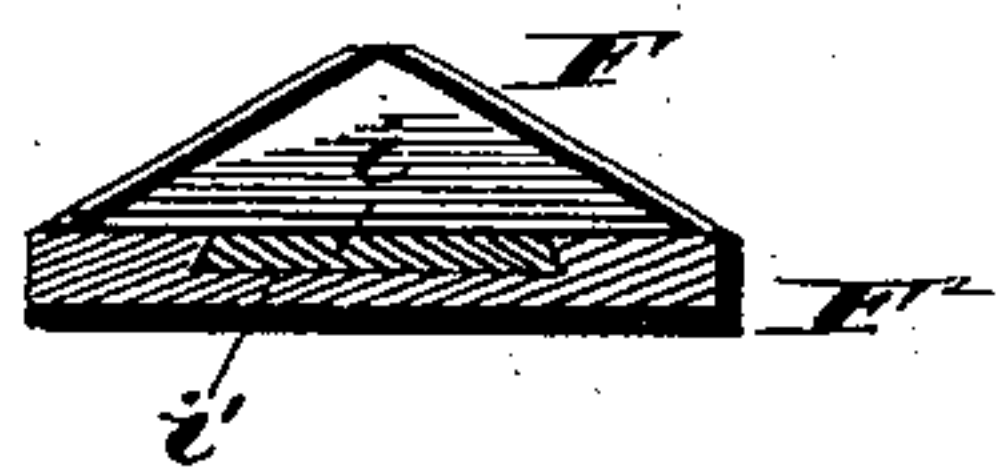


Fig. 8.



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UNITED STATES PATENT OFFICE.

SQUIRE S. TURNER, OF COLUMBIA, MISSOURI.

ENDLESS-CHAIN SICKLE FOR MOWERS AND REAPERS.

SPECIFICATION forming part of Letters Patent No. 352,963, dated November 23, 1886.

Application filed July 14, 1885. Serial No. 171,623. (No model.)

To all whom it may concern:

Be it known that I, SQUIRE S. TURNER, of Columbia, county of Boone, and State of Missouri, have invented a new and useful Improvement in Endless-Chain Sickles for Mowers and Reapers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to the manner of combining the knife-supporting bar with the shoes or inner shoe and divider of the cutting apparatus, whereby the endless-platform carrier is adapted to travel around said bar with its forward edge close up to the line of cut, and thereby to prevent dragging of the butts in the inward movement of the grain, whereby, also, the rollers for the endless-chain cutters and for the platform-carrier are adapted to be connected to the same shafts.

It further relates to a novel construction of knife-supporting bar and knife-sections, and to the arrangement of adjustable guards or covers in connection with the knife and knife-supporting bar, as will be explained.

In the accompanying drawings, Figure 1 is a plan view of so much of a platform-frame and its attachments as is necessary to show my improvements. Fig. 2 represents a transverse vertical section through the shoe, taken just in rear of the knife-sections and looking toward the points thereof. Fig. 3 is a perspective view of one of the shoes with the knife-adjusting devices, the position of the knife-supporting bar being indicated in dotted lines. Fig. 4 represents a vertical section through the knife-sections and their supporting-bar; Fig. 5, a perspective view of one of the knife-sections and one of the coupling hooks or links detached. Fig. 6 is a plan view showing two of the knife-sections and their coupling-link; Fig. 7, a perspective view; Fig. 8, a transverse vertical section through one of my improved knife-sections, showing the joint between the cutter and link portions thereof; and Fig. 9 represents a section through the knife-supporting bar and knife guards or covers.

A and A' represent the shoes or divider and inner shoe of the cutting apparatus, the latter being in practice connected with the main

or truck frame of the machine in any usual or preferred manner.

B is the knife-supporting bar, which may be attached at its ends to the shoes A and A' in the manner described in my application for a patent filed May 26, 1884, Serial No. 132,788, for use in mowing, but which in reapers I prefer to support above the shoes upon angle-irons *a*, secured to the shoes near their inner adjacent sides, in such manner as to provide for the passage of the endless-platform carrier around the bar B and to leave room outside of the angle-irons and bar for the endless-knife rollers, as shown.

In the former application referred to, the shoes were provided each with a standard for supporting the knife-rollers, arranged in rear of the latter; but in reaping-machines I prefer to arrange the supporting standard or uprights in front of the knife, as indicated at A², in such manner that the outer rollers, C and C', mounted upon or secured to shafts C³, journaled at their forward ends in or secured to slotted standards D D', adjustably connected with the uprights A², may extend by the ends of the bar *b* to form or receive the carrier-rollers. By this arrangement of the standard A² and roller-adjusting devices, in connection with the angle-irons *a*, I am enabled not only to extend the rollers C and C' to form the endless-platform-carrier rollers, as shown; but also to depress said rollers sufficiently to bring their upper surfaces into the same plane with the line of cut, whereas in my former construction referred to the line of cut was in the plane of the lower faces of the rollers. The carrier-rollers are by preference slightly larger than the knife-rollers, to permit the carrier-apron to pass freely around the bar B from end to end, and the construction described permits the forward edge of said carrier to be brought up close to the heel ends of the knife-sections and down close to the line of cut, thereby not only removing all obstructions from the path of the forward edge of the carrier, but adapting the latter to readily receive the falling grain. By placing the standards A² in front of the knife and its rollers, said standards are made also to protect the rollers and their actuating-gearing from the falling grain. Guiding-rollers E and E' are mounted

upon stud-shafts rigidly secured to slotted standards E^2 , adjustably connected with the uprights A^2 , and so arranged as to guide and hold the cutters in their movement through the lower portion of their path up snugly against those moving through the upper part of said path.

The knife-supporting bar B is shown in cross-section, Fig. 4. It consists of a rectangular bar provided on its forward edge with a tongue, B' , extending the whole length of the bar, and beveled at its forward edge at b from both its upper and lower sides to an edge, as shown. The tongue B' is grooved from end to end on both its upper and its lower face at b' and b^2 , to accommodate the links connecting the knife-sections and adapt the latter in rear of their cutting-edges to rest snugly upon and move in contact with said faces of the tongue, with their heel ends abutting snugly against shoulders b^3 , formed at the junction of the tongue B' with the main portion or body B of the bar. The knife-sections consist each of two parts—one the cutter proper, F, which in its cutter portion resembles in shape those of an ordinary scalloped cutter, and a rectangular open-link portion, F' , which forms a part of a link of the endless chain. The end bars, $f f'$, of the link portion are rounded, as shown, and the rear longitudinal bar, f^2 , which may be either round or rectangular in form at its junction with the end bars, f and f' , is notched or cut away at f^4 on its lower face, to permit the passage over it of an open hook, g , on one end of a link, G, when the knife-section and said link are held at an acute angle one with the other. By constructing the link portions of the knife-sections and the coupling-links as described the knife-sections can be readily removed from the endless chain for sharpening or renewal when required, and, being thus easily separated, can be much more easily handled for grinding than when they are permanently connected. The forward longitudinal bar, f^3 , of the link portion of the knife-sections do not require to be cut away or notched, as the coupling hook or link can be always applied from the rear, and said forward bar, upon which the cutter portion F is formed or to which it is applied, and upon which the principal strain on the link falls, can thus be made of any width necessary to give the desired strength to the link. In some instances, instead of coupling the knife-sections closely together by the same double hook, as shown in Fig. 6, I find it desirable to interpose a blank link or link-section, as shown at H, Figs. 1 and 2, about equal in length to one of the knife-sections, but without the cutter portion thereof, and adapted to be united to the coupling-hooks in the same manner. The blade or cutter portion of the knife-section, instead of extending directly forward from the bar f^3 of the link portion in the same plane with the latter, is connected with said bar by an inclined

or obliquely-arranged portion, F^2 , formed on the link portion and conforming to the bevel b on the forward edge of the tongue B' , in such manner as to bring the faces of the opposing cutters projecting forward of such edge and from opposite sides of the tongue into close shearing relation as they move by each other in opposite directions. The inclined portion F^2 , uniting the link and blade, rests upon the bevel b of the tongue, and serves to prevent the points or angles of the blades from catching one another as they pass around the driving-rollers or sprocket-wheels. To insure this action the side corners of the triangular blades may be cut off, as indicated at f^5 . The blades and link portions may be formed together in one piece; but for economy of manufacture and to facilitate repairs I prefer to make them separate—the link portion F' with its inclined shank portion F^2 of malleable cast-iron or other suitable material, and the blades F of steel. The blades, in such construction, are provided each with a rearwardly-projecting inclined tongue, i , of dovetail form, matching a socket or groove, i' , of corresponding form in the shank F^2 , and secured therein by rivets at i^2 or other suitable fastening. This construction enables me to detach broken blades or links and to substitute others for them.

J and J' represent two sickle guards or covers secured to the bar B outside of the knife or sickle, and extending one over and the other under the latter to the heel of the cutting portions thereof. They are grooved at j and j' to accommodate the chain-links, and inclined in front of said grooves to conform to the bevels b of the tongue B' , and are provided at their ends with angular arms or tongues $j^2 j^3$, which project forward and are secured to the shoes A and A'—one to the upper and one to the lower face of the shoe, at each end—by means of set-screws or other suitable fastenings, as shown. Suitable washers, k , are interposed between the ends of these arms and the shoes, and when the parts become worn, by removing one or more of these washers and tightening the set-screws or fastenings, the forward edges of the guards or covers may be drawn closer together, and so made to draw the oppositely-moving cutter-sections into close shearing relation to each other. These covers serve to protect the knives and to prevent straw and other obstructing material from becoming caught by and interfering with the action of the chain portion thereof.

K represents a tank, shown secured to the rear face of standard A^2 , but which in practice may be supported at any suitable point on the machine, designed, when the machine is in operation, to be filled with water, and provided with a pipe at k , having a cock, k' , for regulating the escape or flow of water from the tank, said pipe conducting the water to and keeping the cutters moistened sufficiently to prevent the gumming matter exuding from the

grass or grain from adhering to the cutters. It also serves to keep the cutters from heating. The pipe *k* may be made to convey the water to any convenient portion of the endless-chain cutter for this purpose.

The grain-platform frame, aside from the features specifically described, may be constructed and connected with the main or wheel frame in any usual or preferred manner.

10 Having now described my invention, I claim as new—

15 1. The endless-chain cutter and platform-carrier, in combination with the knife-supporting bars secured to the shoes or innershoe and divider by means of angle-irons, for the purpose and substantially as described.

20 2. The knife-supporting bar, in combination with the endless-apron rollers, the endless-platform carrier driven thereby and arranged in rear of the knife-supporting bar, and the endless-chain cutter arranged in front of said bar and driven by said rollers, substantially as described.

25 3. The combination, with the endless-chain cutter, of the knife-supporting bar provided with the forwardly-projecting tongue having the beveled edges corresponding to the inclined shanks of the cutters or knives, and grooves on its upper and lower faces for the

links of the chain to move in, substantially as 30 described.

4. The knife-supporting bar provided with the forwardly-projecting tongue, grooved on its upper and lower faces, and having the double bevel at its forward edge, substantially 35 as described.

5. The combination, with the knife-supporting bar provided with the grooved and beveled tongue, of the endless-chain cutter, the knife portions of which are connected with 40 the chain-link portion by inclined dovetailed shanks, substantially as described.

6. The combination, with the endless-chain cutter and its grooved supporting-bar, of the grooved guards or covers made adjustable to 45 take up wear, substantially as described.

7. The combination, with the endless-chain cutter, of the supporting-bar having the grooved and beveled tongue, and the grooved guards or covers made adjustable to take up 50 wear, substantially as described.

In testimony whereof I have hereunto set my hand this 11th day of July, A. D. 1885.

SQUIRE S. TURNER.

Witnesses:

J. O. HOCKADAY,
H. B. ROLLINS.