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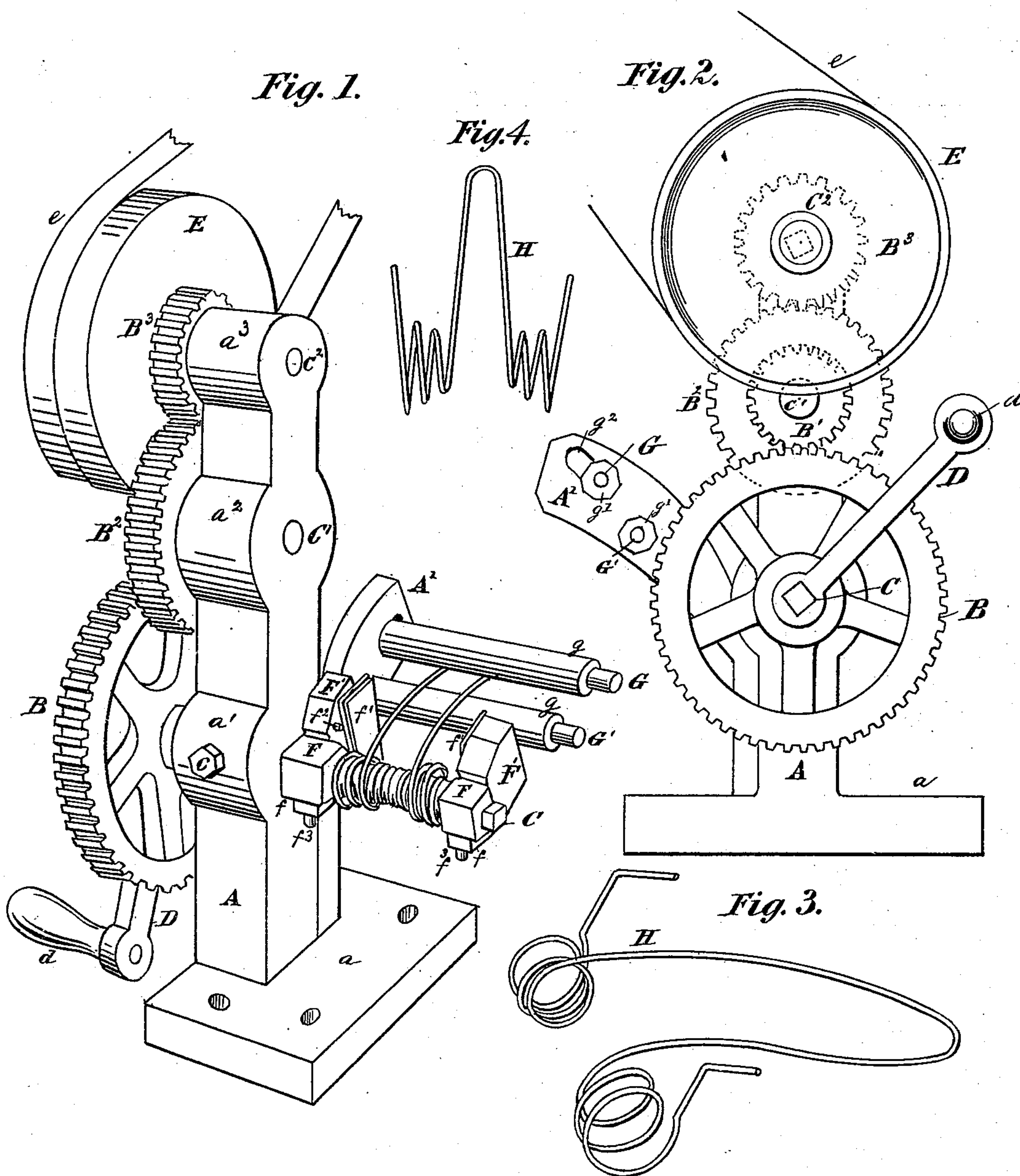
2 Sheets—Sheet 1.

S. KONZ.

MACHINE FOR MAKING WIRE SPRINGS.

No. 504,390.

Patented Sept. 5, 1893.



Witnesses

Frank Pardon,
S. Weidley

Sebastian Konz

Inventor

By Attorney

Rm. Kelly

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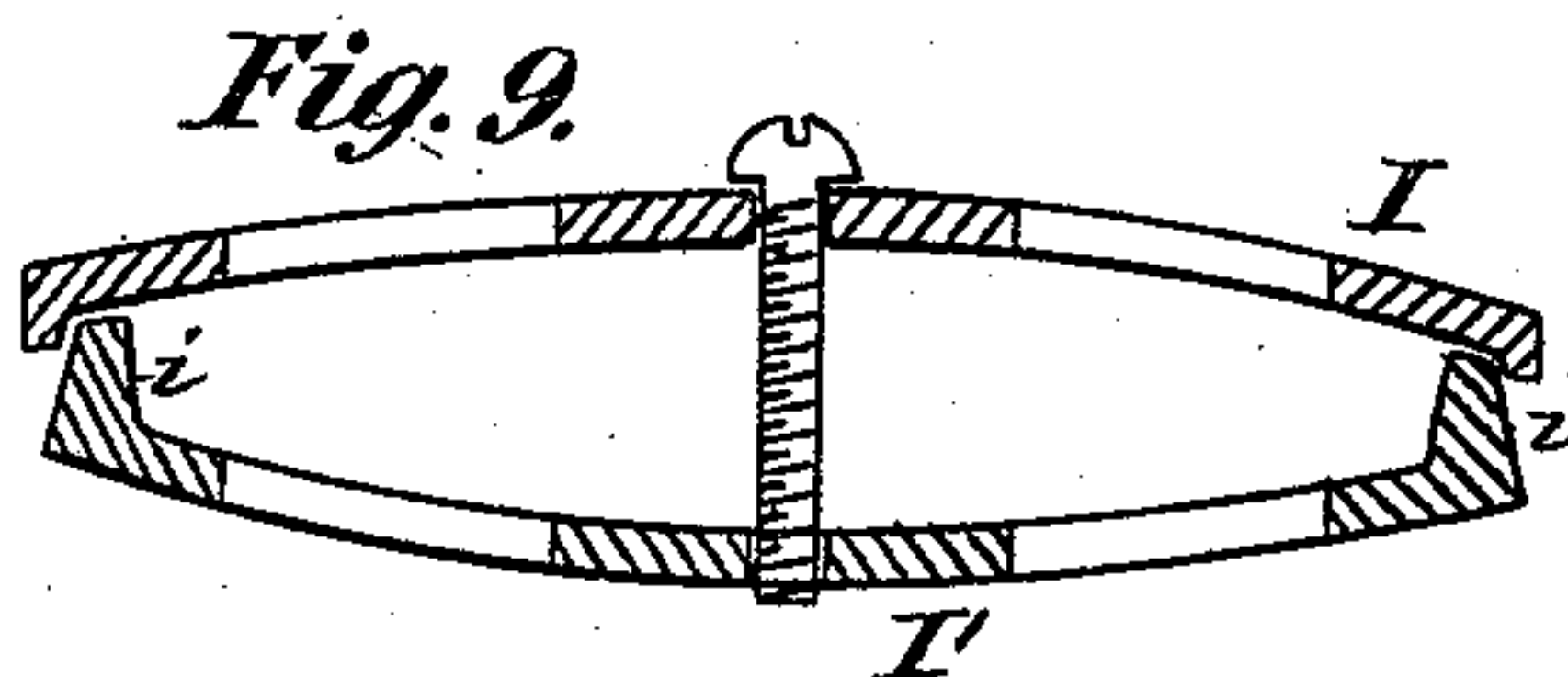
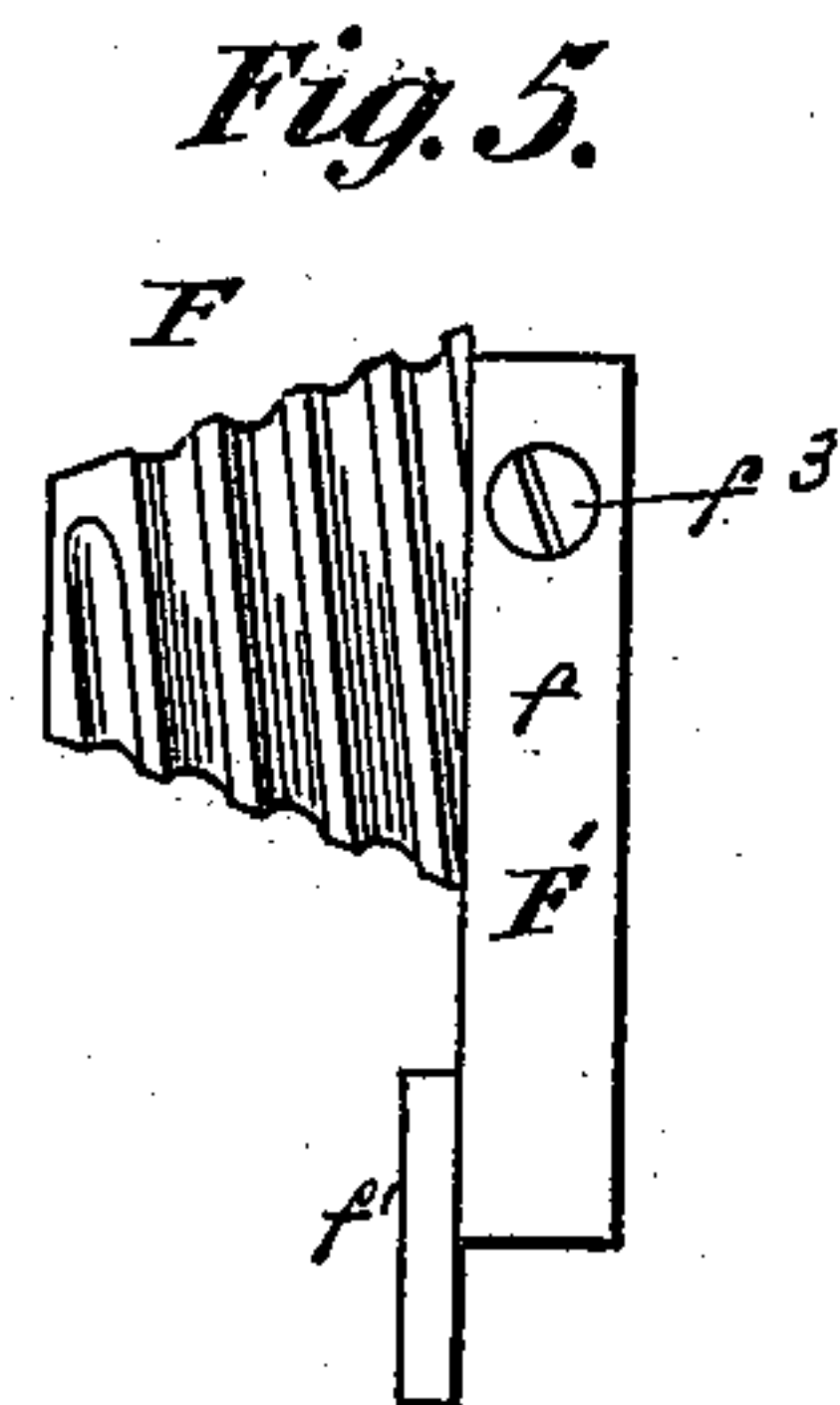
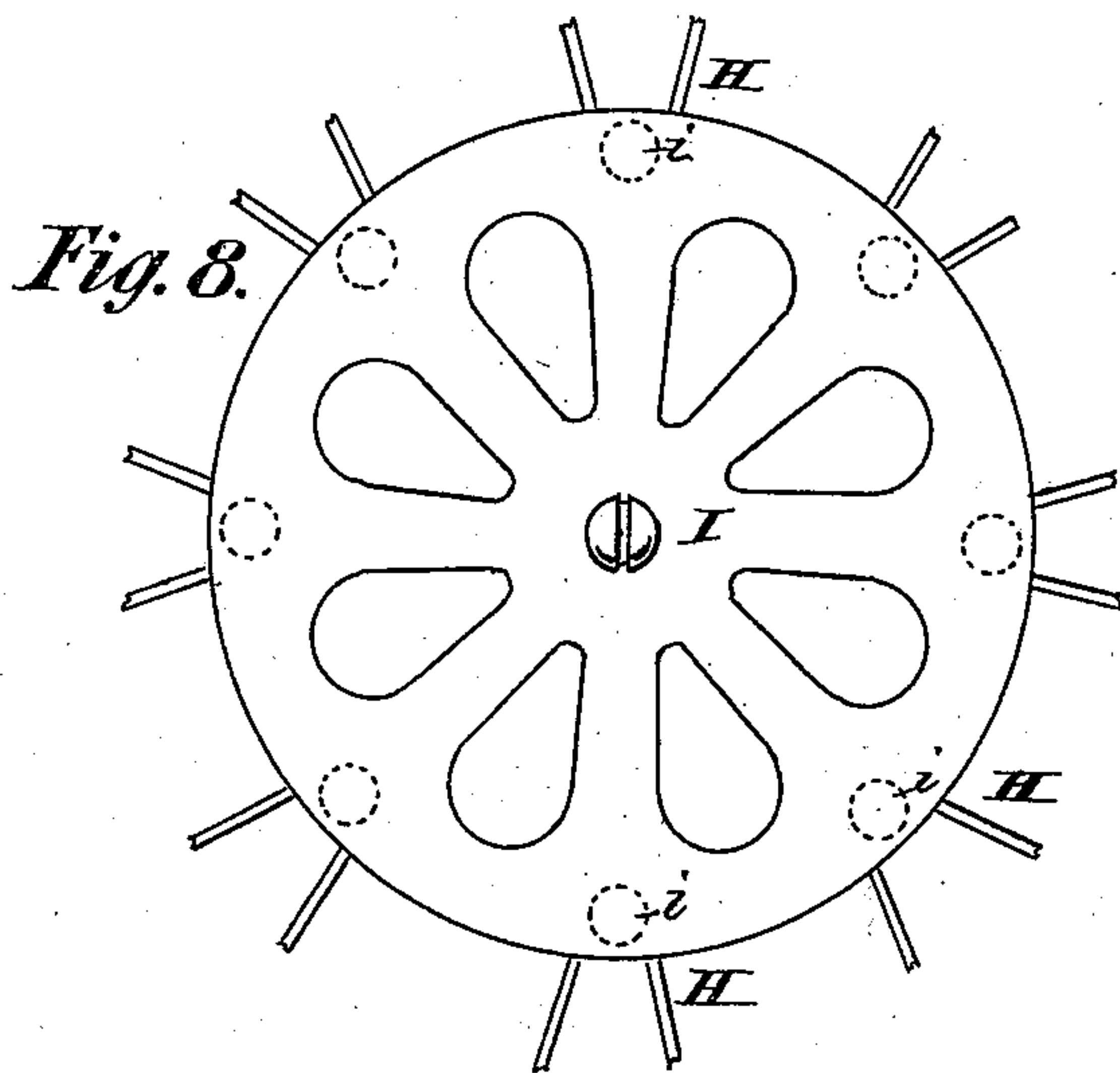
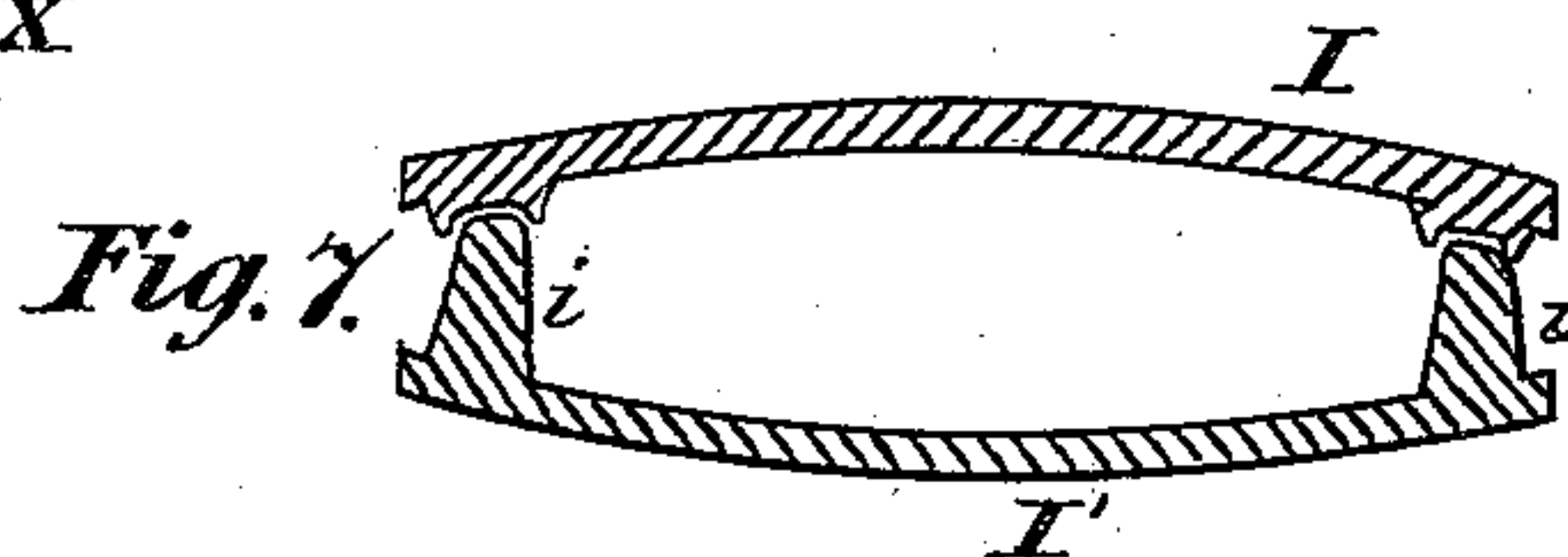
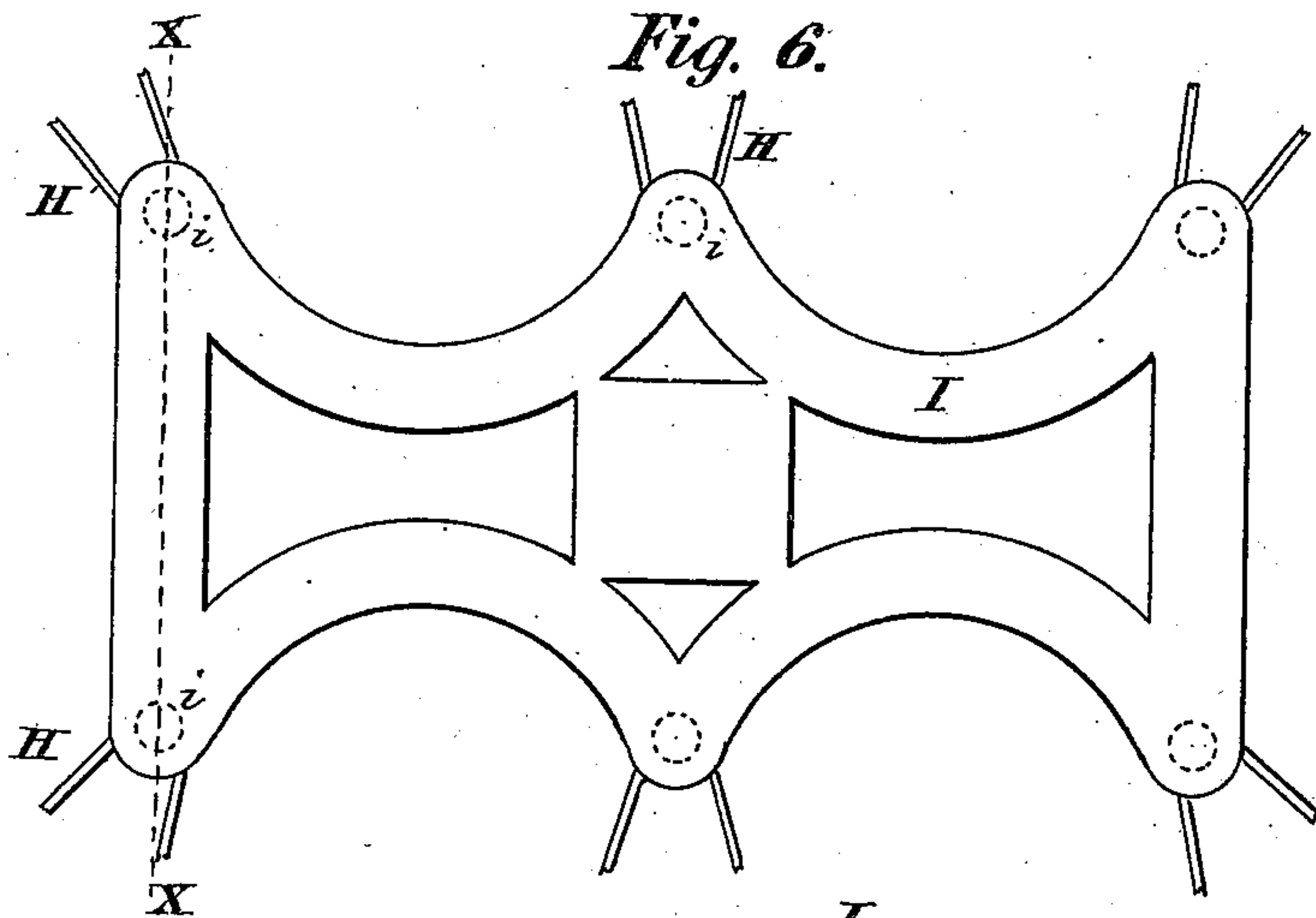
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UNITED STATES PATENT OFFICE.

SEBASTIAN KONZ, OF LOUISVILLE, KENTUCKY.

MACHINE FOR MAKING WIRE SPRINGS.

SPECIFICATION forming part of Letters Patent No. 504,390, dated September 5, 1893.

Application filed June 1, 1893. Serial No. 476,264. (No model.)

To all whom it may concern:

Be it known that I, SEBASTIAN KONZ, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Machines for Making Wire Springs; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a machine, which can be worked either by hand or steam or other power, for making springs either single or double with conical coils and curved suitable for use in bottoms and backs of chairs, sofas and other seats.

Figure 1. represents a perspective view of my machine showing a spring in position as completed. Fig. 2 is a rear elevation of my machine showing the gearing of the wheels and pulley. Fig. 3 is a perspective view of a conically coiled and curved spring made by my machine. Fig. 4 is a detail-plan view of a similar spring showing the coil in the shape of a truncated cone with its larger base outward. Fig. 5 is a detail of a chuck and die-plate used in forming my springs. Fig. 6 is a top plan view of a central coupling for springs made in my machine for use in a long seat. Fig. 7 is a transverse section of the same on the line $x-x$ of Fig. 6. Fig. 8 is another form of central coupling; and Fig. 9 is a diametrical section of the same.

Similar letters refer to similar parts throughout the several drawings.

The standard A having a base, a , journal boxes a' , a^2 , a^3 and the lateral arm A' constitute the frame of the machine. A large spur wheel B is fitted in rear of the standard on a shaft C which has its bearings in the box h' . The rear end of this shaft is squared to receive the crank arm D having a handle d . The spur wheel B is geared to engage the spur pinion B' on the spur wheel B² which is keyed on a stud shaft C' having its bearings in the box a^2 ; the wheel B² engages the spur wheel B³ keyed on a stud shaft C² having its bearings in the box a^3 . The shaft C² projects

beyond the wheel B³ and is squared at the outer end to receive the pulley E adapted to be revolved by a belt e . The shaft C passes through the standard A and projects in front of it a sufficient distance to receive the dies and chucks F' and F. This forward projecting part of the shaft is squared and the chucks and dies have square apertures through them adapted to fit over it. The shaft C is held in its bearings by a set screw c which passes through the journal box into a groove around the shaft.

From the arm A' two stud posts G and G' project forward parallel to each other and to the shaft C. These stud posts pass through the arm A' and their ends are screw threaded. They are held in place by nuts g' . Over each of these posts is fitted a roller sleeve g . A studding on the posts inside the arm A' prevents the roller sleeves from being clamped when the nuts are tightened. The aperture in the arm in which the stud G is fixed is a slot g^2 , which enables G to be moved farther from G' when it is desired to change the curve of the spring.

The chucks F are made in the shape of a truncated cone, as shown in Fig. 5, rising from a squared butt; to the base of each chuck is attached a die block F' having an arm f by a screw f^3 passing through f into the chuck-butt. To make the connection stronger the inner edge of the die block is dovetailed into the chuck butt.

To the inner face of each die block is riveted a stud plate f' ; and at a sufficient distance from the inner edge of each stud plate to allow the largest wire to be used for springs to pass between it and the stud plate, is raised the stud pin f^2 .

Around the conical part of each chuck is made a spiral groove of depth and width adapted to receive the wire to be made into a spring, and these grooves are so arranged that one forms a left hand screw thread and one a right hand screw thread. A pair of these chucks are placed on the shaft C so that the smaller bases of the truncated cones they form will be in juxtaposition. The chucks herein described and illustrated in the drawings are adapted to form the spring H bent at the extremities of its arms as shown. Chucks of different sizes may be used having die plates

calculated to shape the free ends of the springs to suit the places where they are to be used but my chucks are all adapted to make the coil of the spring in the shape of a truncated cone with the larger base outward that being the shape which gives the spring the greatest elasticity and resiliency.

I represents the top plate of the central coupling for my springs, and I' the lower plate, having posts i rising from it at proper points to engage the loop of the spring H as shown in Figs. 6 and 8. The two plates may be held together after the springs are adjusted by a central screw as shown in Fig. 9, or by other suitable means.

When my machine is in use it should be attached to some firm foundation by bolts passing through the base a .

The mode of operating my machine is as follows: A piece of wire of sufficient length to make a spring of the size desired is bent in the middle and the two ends brought near together till the distance between them corresponds to the distance between the inner faces of the die blocks F'. If it is desired to have the ends of the springs shaped as shown in H, Fig. 3, the wire at each end is first bent at a right angle, and the bent part fitted along the top of the steel plate f' and the straight part along the side of the plate and between it and the pin f^2 . The arms of the spring are then placed between the rollers, g , on the stud posts G and G', the power is applied by means of the crank D, or through the belt e on the pulley E and the chucks and dies are revolved around the shaft C. The operator sees that when the revolution begins the portion of the wire to be coiled properly engages first, on each side, the screw groove at the outer bases of the chucks where the diameter is largest. Then as the shaft C is revolved, the stud post G presses the arms of the wire causing the coils to follow the thread groove in the chuck without superposition. This gives the coil its conical character. When the coils reach the inner bases of the chucks or when the number of coils desired are finished the revolution of the shaft is stopped. The completed spring is withdrawn by sliding the chucks off the shaft when the coils can be easily disengaged from the threads. The fastening ends of the springs can be shaped to fasten in the bottoms, sides or backs of seats so that they may be inserted or removed without disturbing the upholstering. The thread-

ed portions of the chuck where they join the square base are a little larger in diameter than the base making the outer thread a better guide for the wire when the coiling process begins. When power is to be applied by the crank D to the shaft C, the wheel B can be thrown out of gear with the pinion B'. When more power is needed through the crank the pulley E can be removed from the shaft C² and the crank D put upon that shaft.

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

1. A machine for making springs with a conical coil, having a frame consisting of a base a , and a standard A provided with journal boxes a' a^2 and a^3 and a lateral arm A'; stud posts G and G', provided with roller sleeves, projecting from the outer surface of A' parallel with a shaft C journaled in the box a' and projecting in front and rear of the standard A, carrying on its front projection a pair of oppositely grooved conical chucks F having die blocks attached, and on its rear projection a spur wheel B, geared to engage a train of spur wheels B', B² and B³ keyed on stud shafts C' and C²; a pulley E keyed on the shaft C² adapted to carry a belt e , and a crank D having a handle d , all arranged and constructed substantially as described and for the purposes specified.

2. In a machine for making conically coiled springs, the combination, with a standard having a lateral arm A' carrying stud posts G and G' provided with roller sleeves g , of a shaft C, having its bearings in the standard parallel with the stud posts carried on the lateral arm and projecting in rear and front of the standard, adapted to be revolved by power applied to the portion projecting rearwardly, and carrying on the portion projecting forward a pair of oppositely screw-grooved chucks F, in the shape of truncated cones with their larger bases outward, each provided with die blocks F', stud plates f' , and guide pins f^2 , constructed and arranged substantially as described and for the purposes specified.

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

SEBASTIAN KONZ.

Witnesses:

CHAS. D. SHANK,
B. FRESE.