

(No Model.)

H. F. KEIL.
SPRING HINGE.

No. 554,447.

Patented Feb. 11, 1896.

Fig. 1.

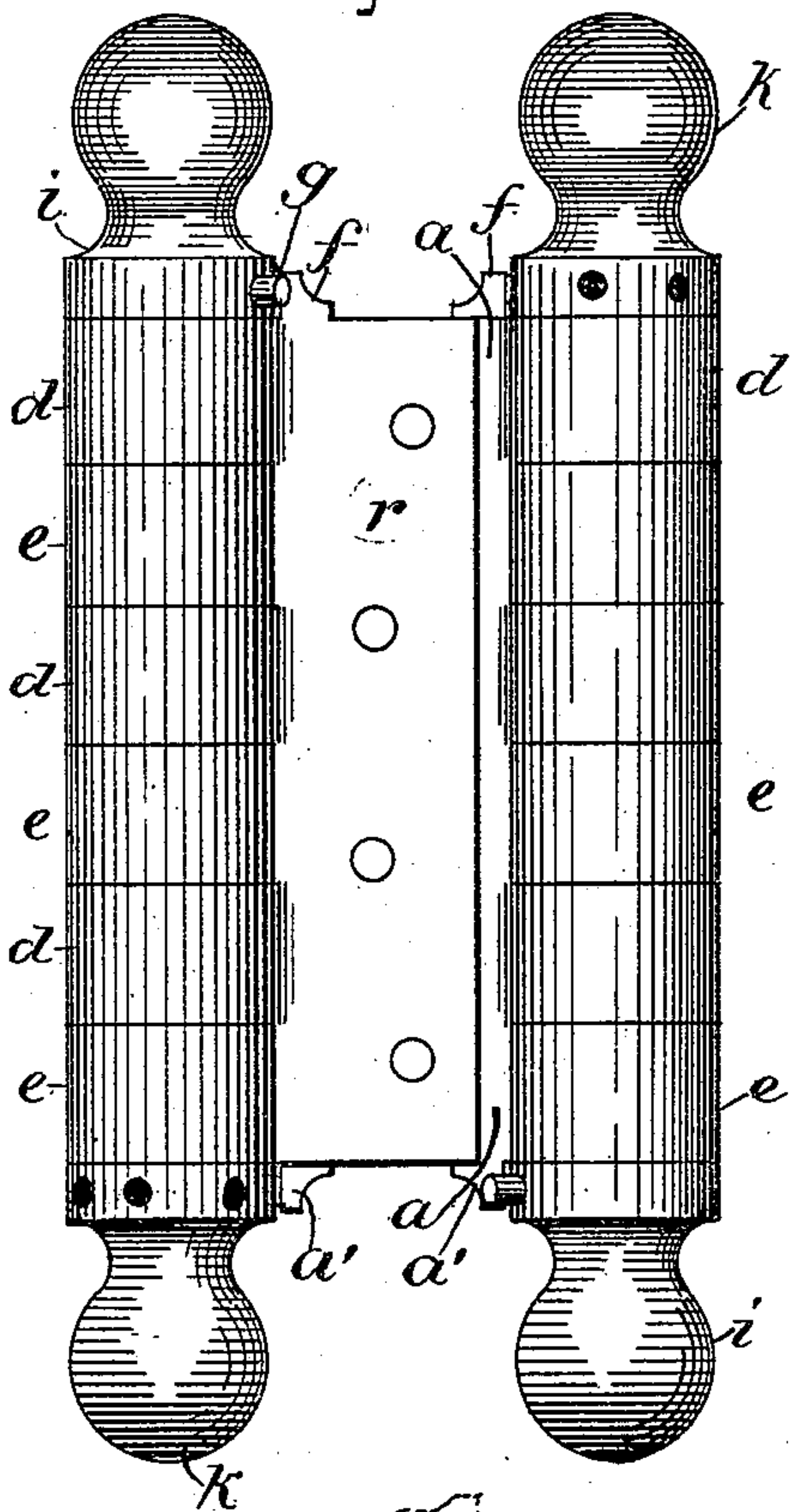


Fig. 2.

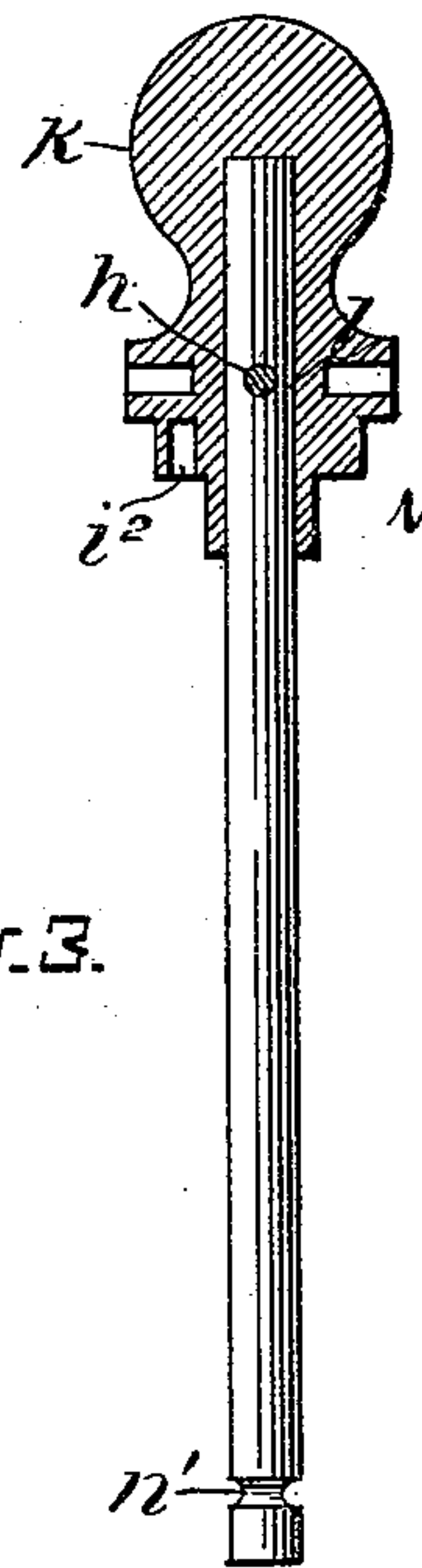
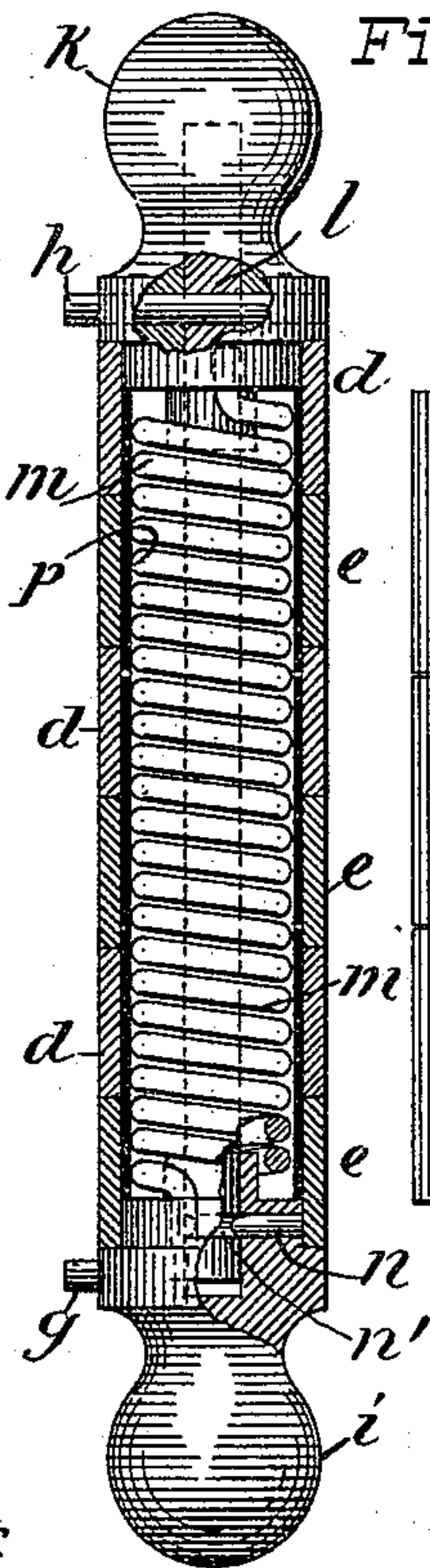


Fig. 3.

Fig. 7.

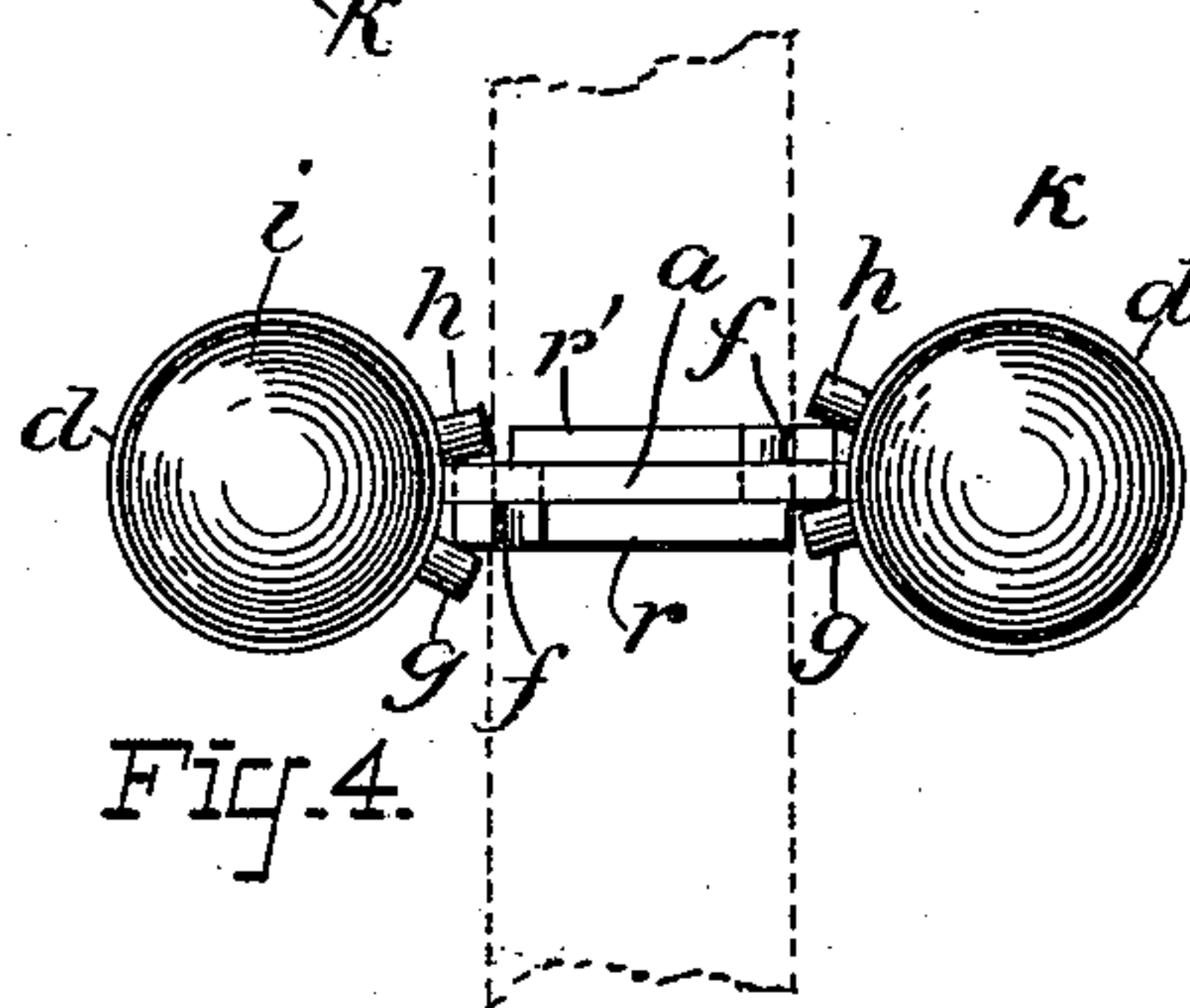


Fig. 4.

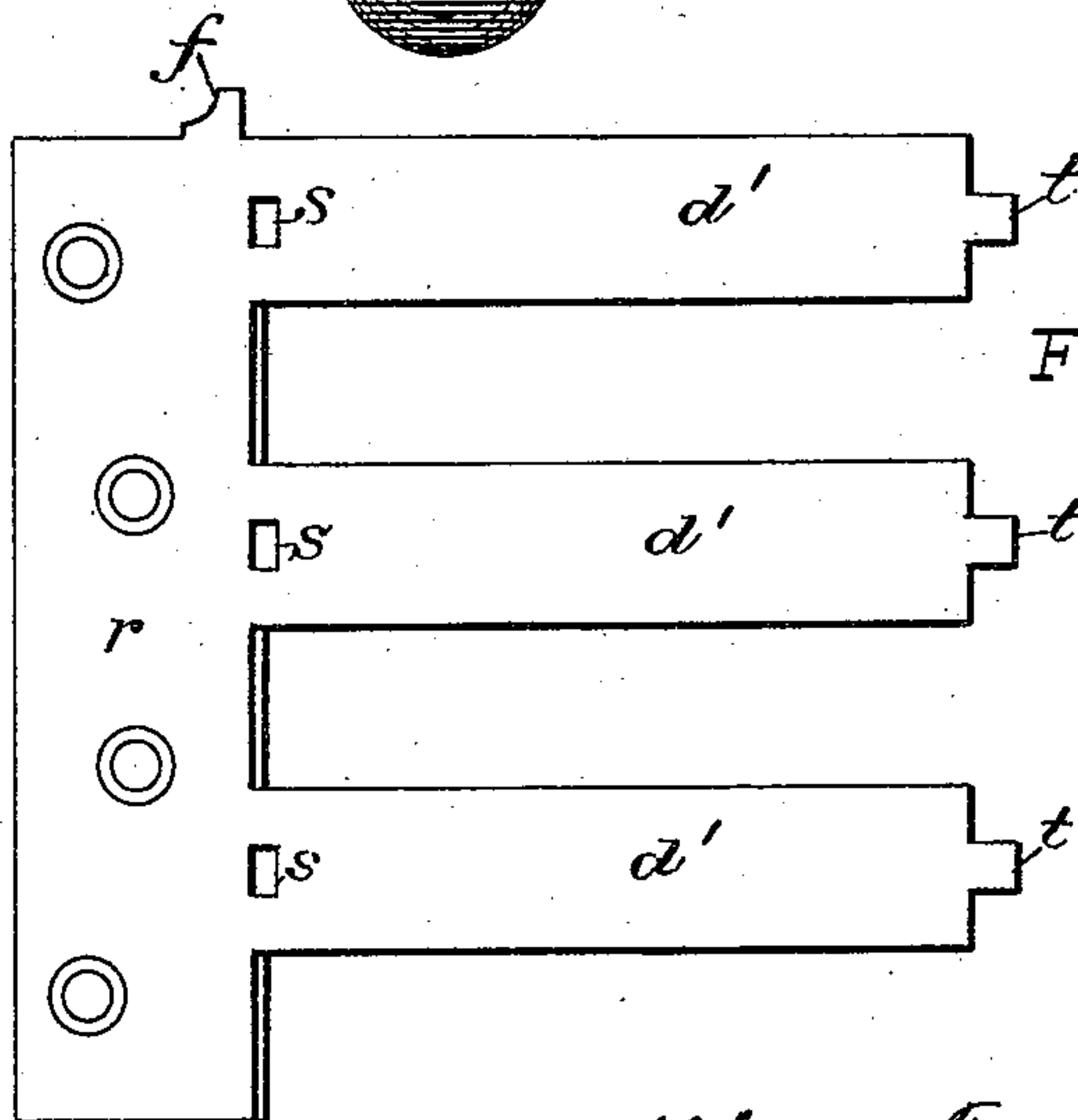
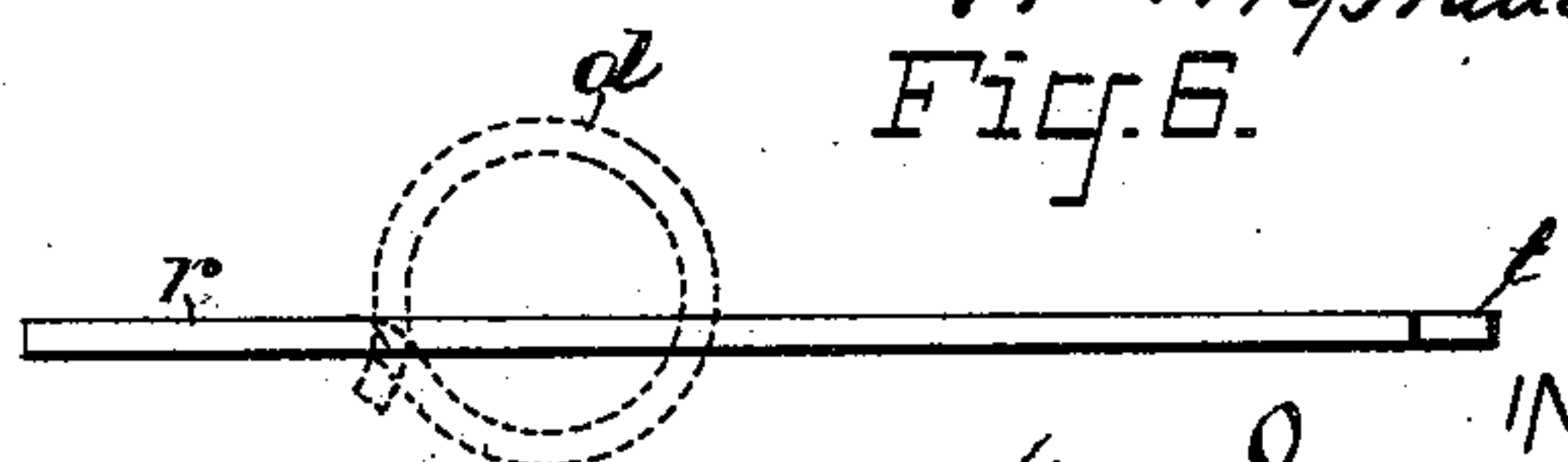


Fig. 5.

Henry Francis Keil
Fig. 6.



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INVENTOR:

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att'y

UNITED STATES PATENT OFFICE.

HENRY FRANCIS KEIL, OF NEW YORK, N. Y.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 554,447, dated February 11, 1896.

Application filed October 7, 1893. Serial No. 487,415. (No model.)

To all whom it may concern:

Be it known that I, HENRY FRANCIS KEIL, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented a certain new and useful Improved Hinge, of which the following is a specification.

My invention relates to a new and improved method of constructing spring-hinges, and is an improvement on my Patent No. 387,421, granted to me August 7, 1888.

In the spring-hinge herein described I provide a leaf made entirely of sheet-steel or other sheet metal, which I prefer to use on account of its great strength. The leaf is suitably stamped or cut, having the several tongues out of which are formed the knuckles within which the spring is situated. It is obvious that the leaves may be cast metal without departing from the spirit of my invention.

In the drawings, Figure 1 is a front elevation showing the hinge when put together ready for service. Fig. 2 is a longitudinal section of the hinge with part of the tips and knuckles cut away to show the position of spring and spindles and their adjustment. Fig. 3 is a plan view of the tubing or pintle in sections. Fig. 4 is a top view with dotted lines showing the woodwork of the door. Fig. 5 is a plan view of the leaf knuckle-blank. Fig. 6 is an end view of the blank with the knuckle in dotted lines, and Fig. 7 a view of the spindle, showing grooves and perforations.

a is the main leaf having two sets of knuckles *e e* and the posts *a' a'*.

d are the knuckles of the leaves.

d' are the tongues of the knuckle-blank; *e*, the knuckles of the main leaf *a*.

g are check-pins set in the borings of the tips *K* and are adapted to rest against the posts *f f* and *a' a'*.

h is the removable pin that passes through the borings in the shoulder and the boring of the spindle *l* and fixes the same in position.

i are the tips having shoulder *i'*, which is provided with the boring *i²* to receive the upset end of the spring *m*.

m is the spiral spring, the ends of which are upset to fit in the borings of the tips and provides for the contraction of the spring.

n is a pin by means of which the tip *i* is swiveled in the shank *l* by means of the recess *n'*.

p are the sections of the tubular pintle. 55

r is the knuckle-blank having screw-eyes and the tongues *d'* with the slots *s* to receive the projections *t* to form the knuckles *d*.

The tongues are provided with a projection which fits into a socket in the leaf, as shown. 60 The projection is then riveted or clinched, thus forming a very strong knuckle.

Into the knuckles formed by the bringing together of the two leaves I place a metal tubing or pintle in one or more sections, thus providing a correct and smooth bearing or pintle for the knuckles' guidance. These sections are so fitted that the joints of the knuckles and the joint of the pintle will not meet. 70

The spindle-tip is provided with the two shoulders, and the socket has on its outer periphery the stop pins or checks. The spindle-tip has the same shoulders, but is provided on its outer periphery with sockets to receive any instrument to contract the spring. Each of the spindle-tips has a socket on the middle shoulder, which is to receive the end of the spring. When the spring and spindle are put together, the spindle sets loosely in the spindle-socket of the tip *i*, one end of the spindle being provided with a groove into which fits a pin passed through the side of the shoulder of the tip *i* and set in the groove on its spindle and which holds the spindle and tip together, allowing the spindle to revolve. 80 At the other end the spindle is in a fixed section in the tip *K* by means of the removable pin *h*. When the hinge is put together, the knuckles are interlaced, the tubes or pintles are inserted, the spindle passed through, the spring with its ends inserted in the sockets of the tips, and the whole held in place by putting in the pin *h*. The leaves are provided at alternate ends near the knuckle parts with a projection against which the stop-tip rests. Then the bolt, which may consist of a piece of steel or any other instrument and which fits into the sockets of the rim of the tip *a* and the spring, is contracted to any desired tension and held there by setting the stop-tip into the suitable socket. 100

The shoulder *i'* fits into the end of the knuckle and acts as a guide to keep the spring centrally located, and this prevents the spring from impinging on the pintle.

5 To stiffen the action of the hinge it is only necessary to contract the spring by turning the tip K by means of a key or other instrument set into one of the borings on the rim of the tip and setting the pin so that it rests
10 against the posts.

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

15 A sheet-metal hinge composed of the main leaf *a* having a set of knuckles *e e* at each edge, the two leaves *r r'* each having a set of knuckles *d*, all of said knuckles being formed

from bent portions or tongues of the leaves, the tubular pintles *p* uniting the knuckles of the leaves *r r'* with the knuckles of the main leaf *a*, the spindles *l* each having a head or 20 tip K secured to one end and having an annular groove *n'* near its other end, the tips *i* secured to the spindles *l* by means of pins *n* entering said annular grooves, a spring coiled about each spindle and connected therewith 25 through the medium of the tips, and the check-pins *g h* and stops *f a'*, substantially as described.

HENRY FRANCIS KEIL.

Witnesses:

CORNELIUS J. EARLEY.

RICHARD LIPS.