

No. 725,976.

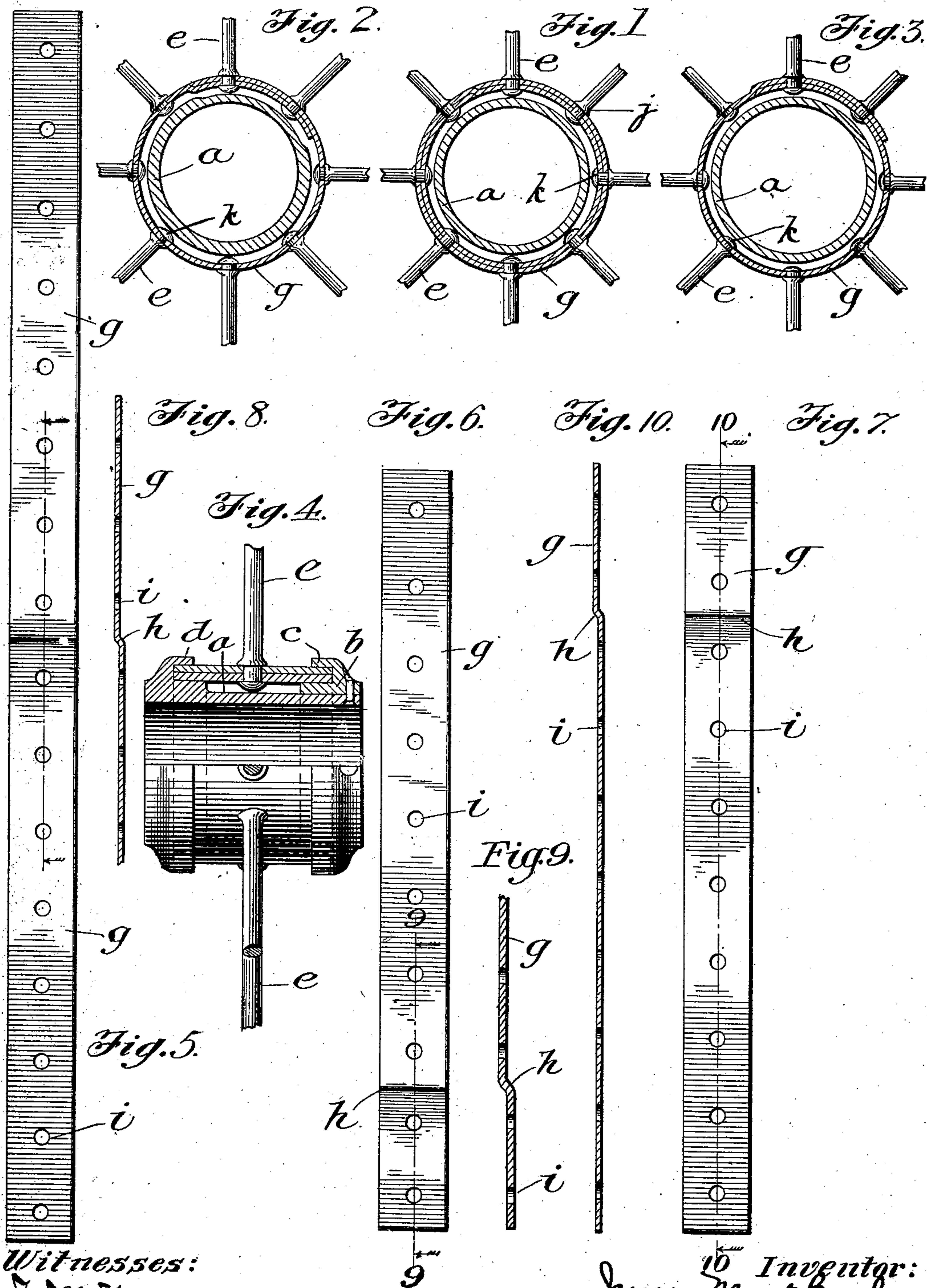
PATENTED APR. 21, 1903.

J. MACPHAIL.
SHEET METAL HUB.

APPLICATION FILED SEPT. 24, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

J. M. Wynn
Mary A. Nicks

Inventor:
James Macphail
By his attys
Rennie & Goldborough

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2 SHEETS—SHEET 2.

Fig. 11.

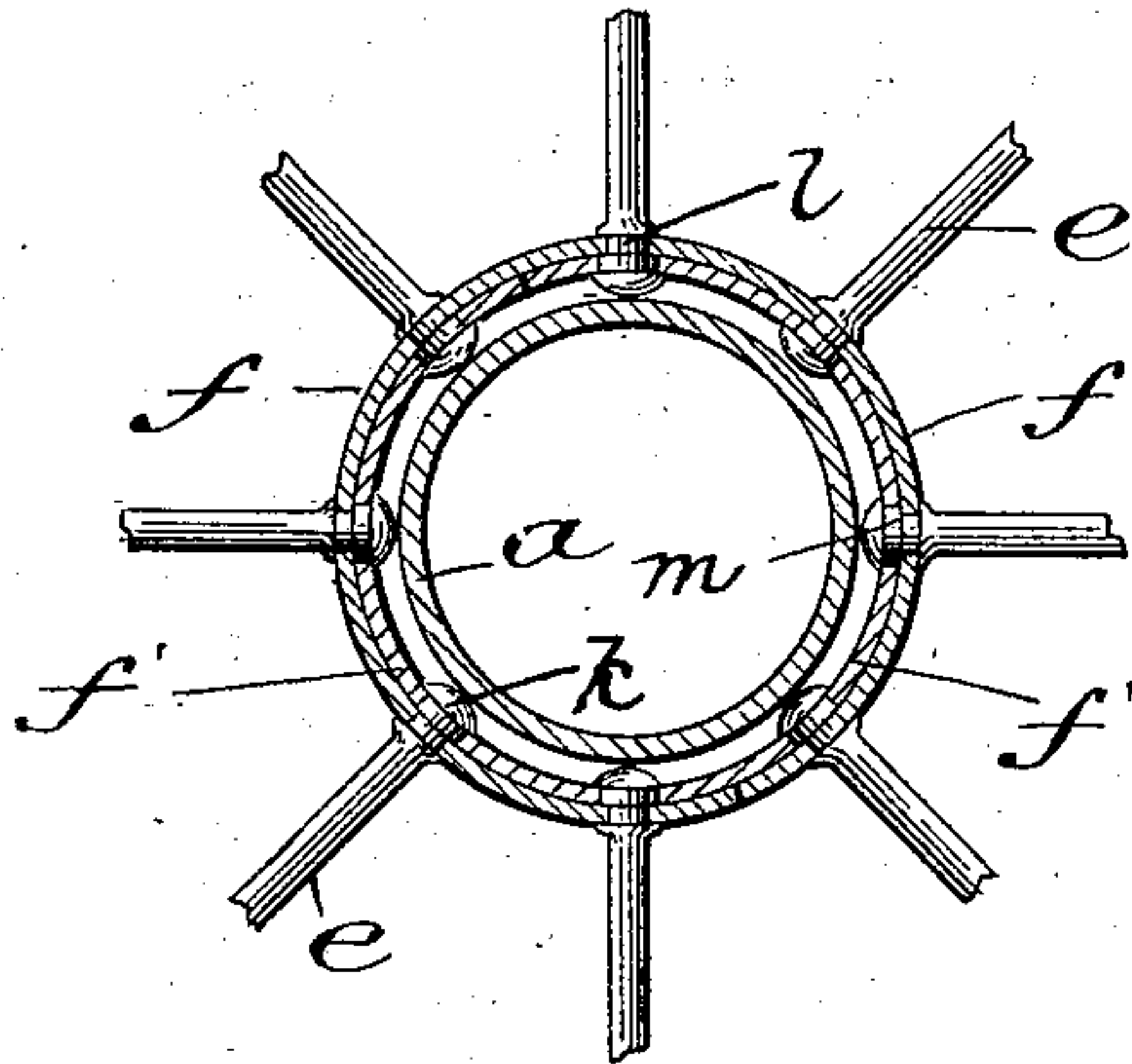


Fig. 13.

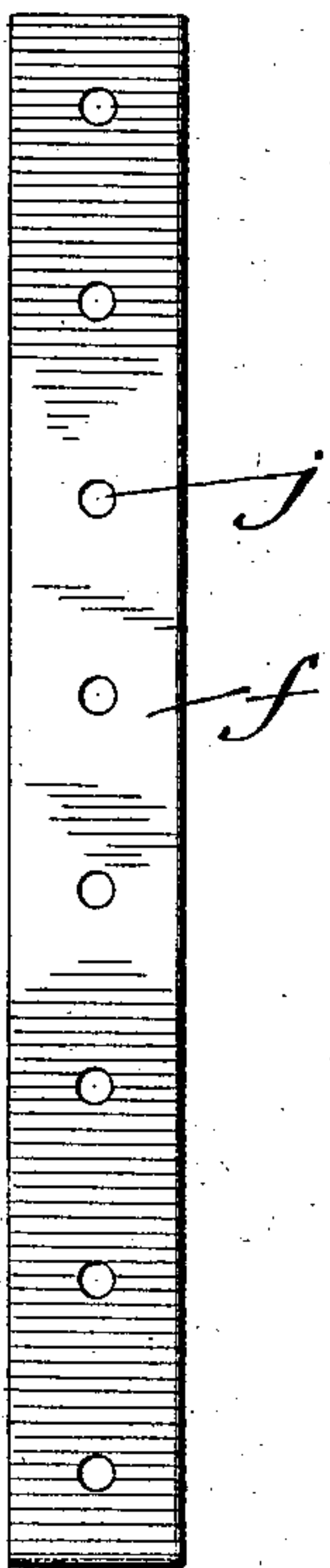
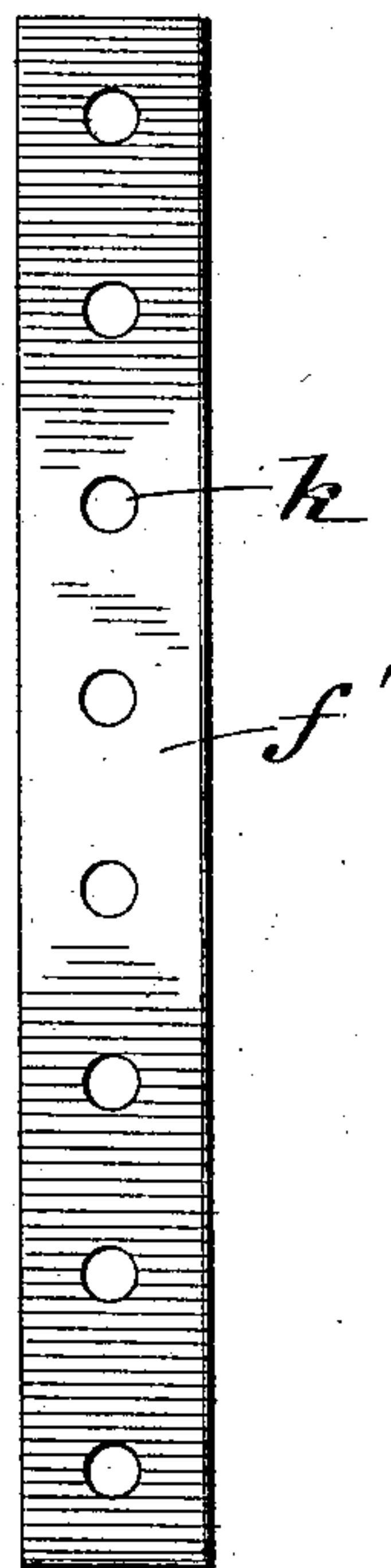


Fig. 12.



Witnesses:

J. M. Wren
Mary A. Harkness

Inventor:
James Macphail
By his attys.
Perine & Goldborough

UNITED STATES PATENT OFFICE.

JAMES MACPHAIL, OF BLUE ISLAND, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

SHEET-METAL HUB.

SPECIFICATION forming part of Letters Patent No. 725,976, dated April 21, 1903.

Application filed September 24, 1902. Serial No. 124,667. (No model.)

To all whom it may concern:

Be it known that I, JAMES MACPHAIL, a resident of Blue Island, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sheet-Metal Hubs; and I do hereby 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.

The invention relates to the construction of metal wheels, more especially such as are intended for agricultural machinery; and it consists in an improved manner of making the hub of the wheel, whereby greater economy in the manufacture is secured and a simpler lighter construction is obtained without impairing the strength of the wheel.

As heretofore constructed metal wheels have had their hubs formed of malleable or gray iron or seamless tubes, and the spoke-sockets have necessarily been bored or punched individually by slow and expensive radially-operating machines. In the present invention this tedious and costly operation is done away with, and the spoke holes or sockets are all formed simultaneously by an ordinary gang-punch at a single stroke of the machine while the metal is straight and flat.

A further feature of the invention is that the hub of the wheel is formed of layers of sheet metal one within another that are riveted together by means of the spokes, which pass clear through all the layers and have rivet-heads formed on them on the inner and outer surfaces of the hub. The layers are thus secured together entirely by the spokes without the employment of other rivets or fastenings.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a cross-section of a hub where the layers are formed by a single strip with its ends overlapped for the entire circumference of the hub. Fig. 2 is a similar section of a hub where the layers only extend around the circumference for little more than the distance between two spokes. Fig. 3 is a similar section of a hub in all respects like that

of Fig. 2, except that the inside surface of the hub is smooth and concentric. Fig. 4 is a longitudinal section of a hub, showing a convenient and effective way of securing the strips to the sleeve or barrel of the hub. Figs. 5, 6, and 7 are side views of strips formed to make the hubs of Figs. 1, 2, and 3, respectively. Figs. 8, 9, and 10 are central longitudinal sections of Figs. 5, 6, and 7, respectively. Fig. 11 is a cross-section of a form of hub where the layers are made out of separate strips instead of a single strip with its ends overlapped, and Figs. 12 and 13 are side views of the individual strips in the form shown in Fig. 11.

Referring to the views, *a* denotes the sleeve or barrel of the hub, and *b* a ring which is riveted to one end of the sleeve. The ring is provided with an inwardly-projecting flange *c*, and the opposite end of the sleeve has a similar flanged *d*. The part of the hub to which the spokes *e* are secured is formed of layers of sheet metal inclosed one within another. These layers may be formed, as shown in Fig. 11, of separate strips *f f'* of sheet metal bent into circular form with their ends abutting flush together and arranged to break joints, as shown, or they may be formed out of a single strip *g* of metal which is similarly bent, but has its ends overlapped to form the layers, as shown in Figs. 1, 2, and 3. In Figs. 1 and 11 the entire circumference of the hub is formed of layers; but in Figs. 2 and 3 the layers do not extend all the way around, and it will therefore be understood that the hub may be wholly or partly formed of such layers. In the construction shown in Figs. 5 and 8 the strip *g* is bent or indented, as at *h*, at about the middle of its length, and when coiled or rolled up into circular form the whole circumference will be formed of two layers and the inner and outer surfaces will be smooth and concentric, as shown in Fig. 1. In the constructions shown in Figs. 6 to 10 the indentation *h* is made near one end, so that when coiled or rolled up into circular form the ends will overlap only, so that two layers extend part way around the circumference and the outer surface will be

smooth in one case (see Fig. 2) and the inner surface in the other, (see Fig. 3;) but the principle of construction is precisely the same in both. In the process of manufacture these
 5 strips have lines of holes *i* punched in them, as before explained, by a single stroke of an ordinary gang-punch. The holes are properly spaced apart to coincide when the strips are bent and overlapped into circular form,
 10 so that in the completed hub they form the sockets for the spokes *e*. These spokes are secured in all but the form shown in Fig. 11 in a manner that is not uncommon in this class of devices—that is to say, their inner
 15 ends are passed through the holes *i*, and having been previously provided with collars *j* near the ends they are upset, as shown at *k*. This constitutes the means for securing the spokes to the wheel-hub and also the means
 20 and preferably the only means for riveting the several layers or strips composing the hub together.

In the form shown in Fig. 11 the spokes are provided at their inner ends with heads *l m*
 25 of different diameters corresponding, respectively, to the large and small holes *k j* in the strips *f'* and *f*. In this form of hub I prefer to make the holes in the inner strip larger than those in the outer strip, and by making
 30 the ends of the spokes with the different-sized heads above described a very strong and se-

cure fastening is effected when the ends of the spokes are upset to complete the riveting.

Having thus described my invention, what I claim is—

1. In a metal wheel, a hub formed of layers of sheet metal bent into circular form, said layers being riveted together by means of the spokes of the wheel. 35

2. In a metal wheel, a hub formed of layers of sheet metal bent into circular form, one within another, said layers being riveted together by means of the spokes of the wheel, the rivet-holes of the inner layer being larger than those of the outer layer, and the spokes
 45 having different-sized heads to correspond with the holes.

3. In a metal wheel, a hub formed of layers of sheet metal bent into circular form, one within another, combined with spokes passing through said layers and having heads
 50 on opposite sides of the same, whereby said spokes serve as rivets to secure the layers together without the employment of other rivets or fastenings. 55

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

JAMES MACPHAIL.

Witnesses:

CHAS. N. CHAMBERS,
 CHAS. W. ALLEN.