

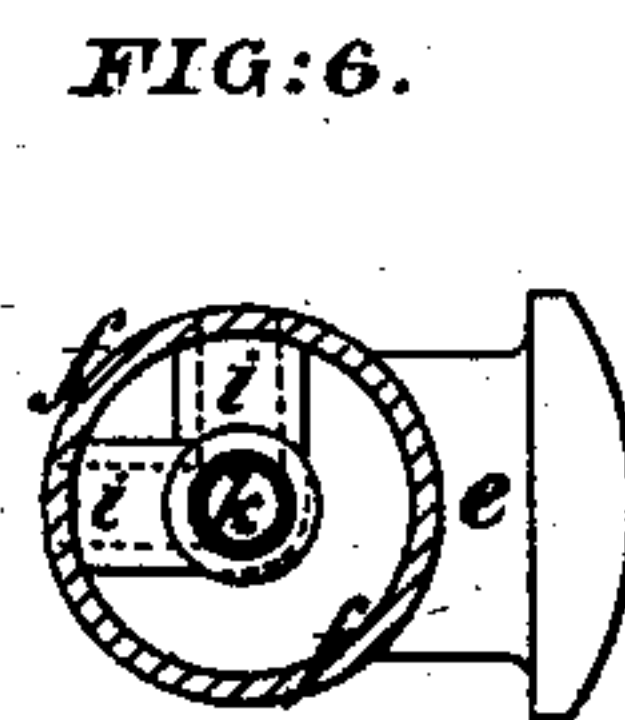
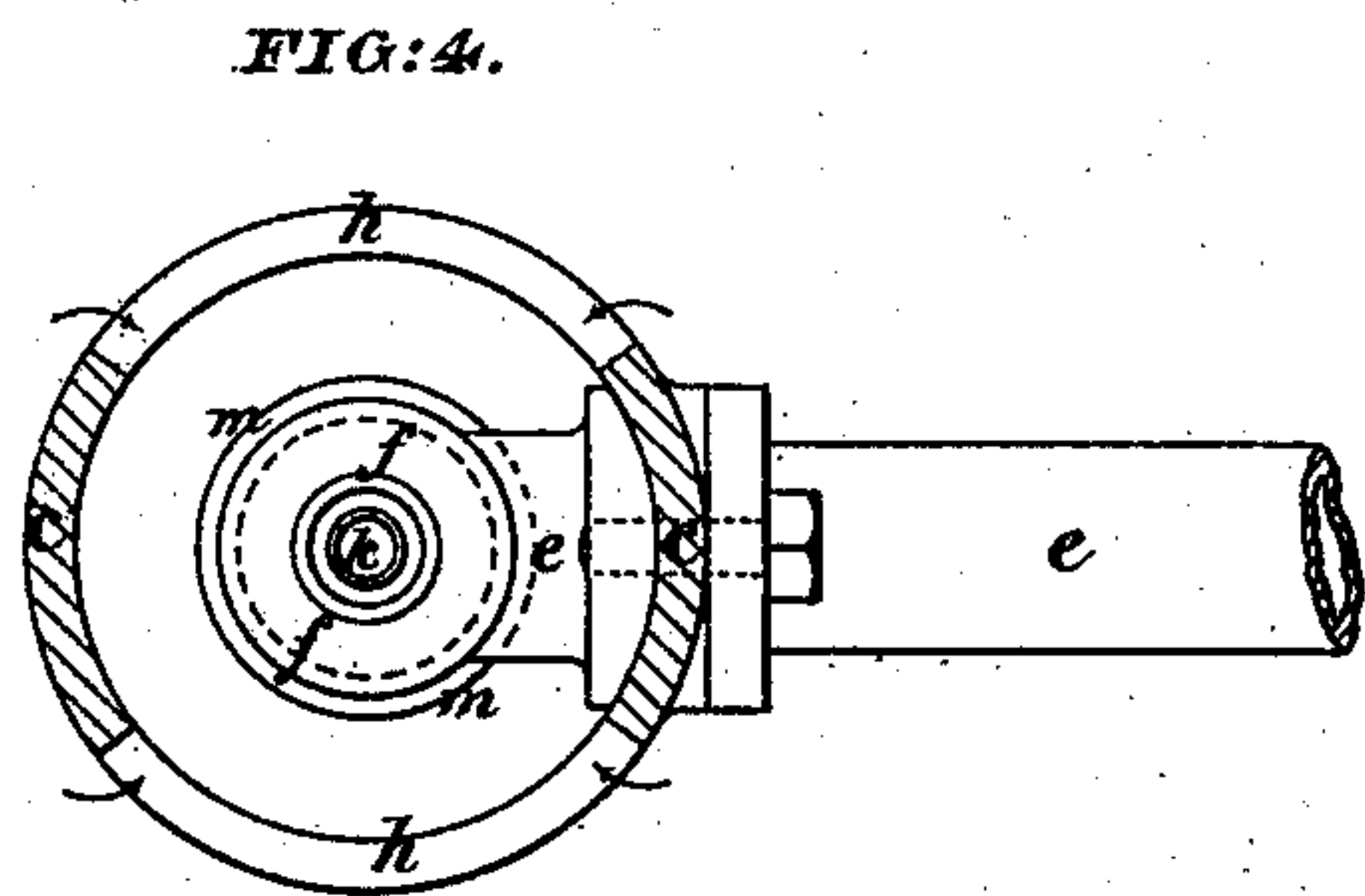
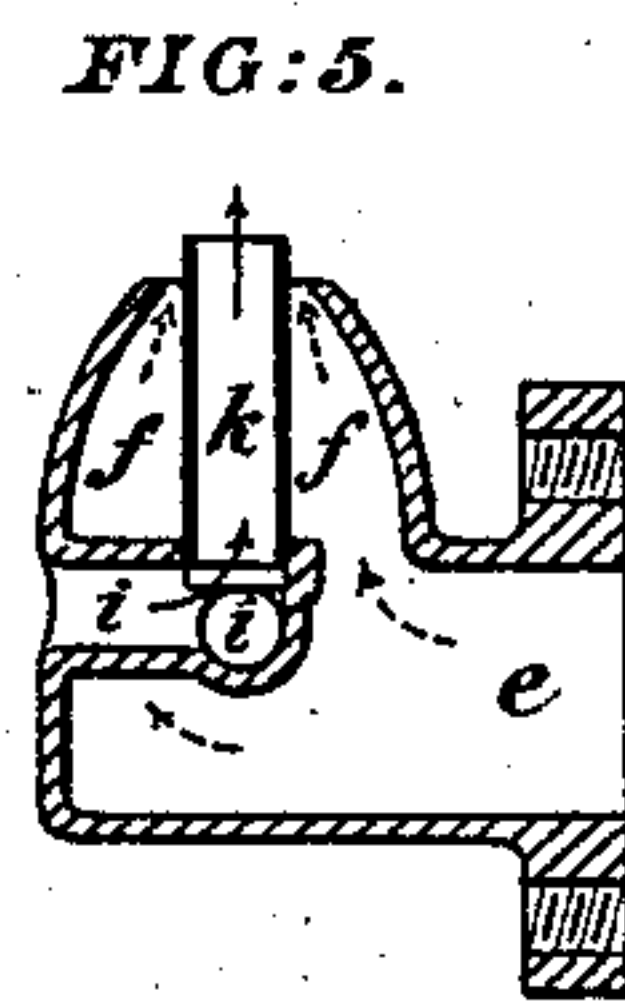
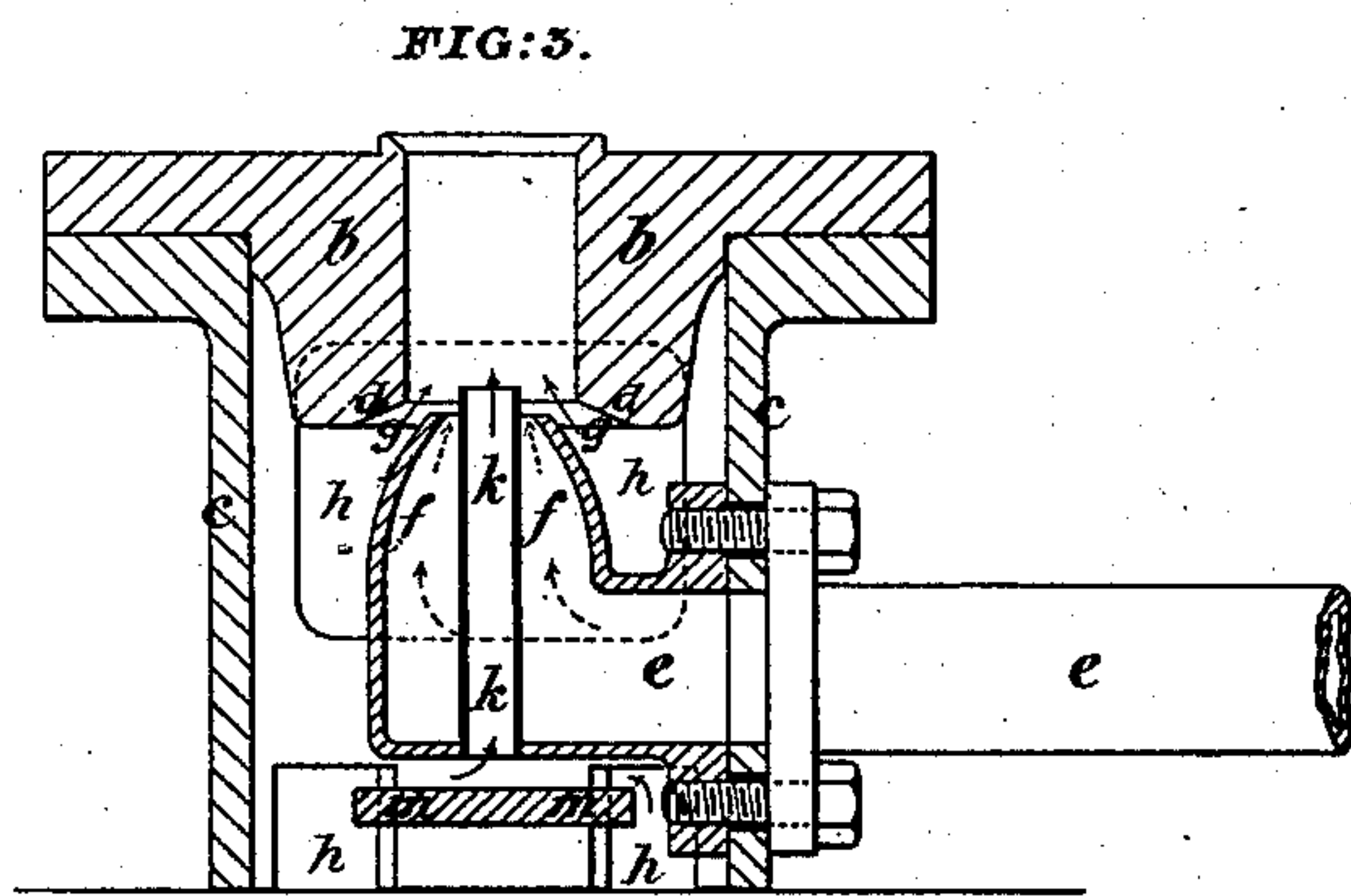
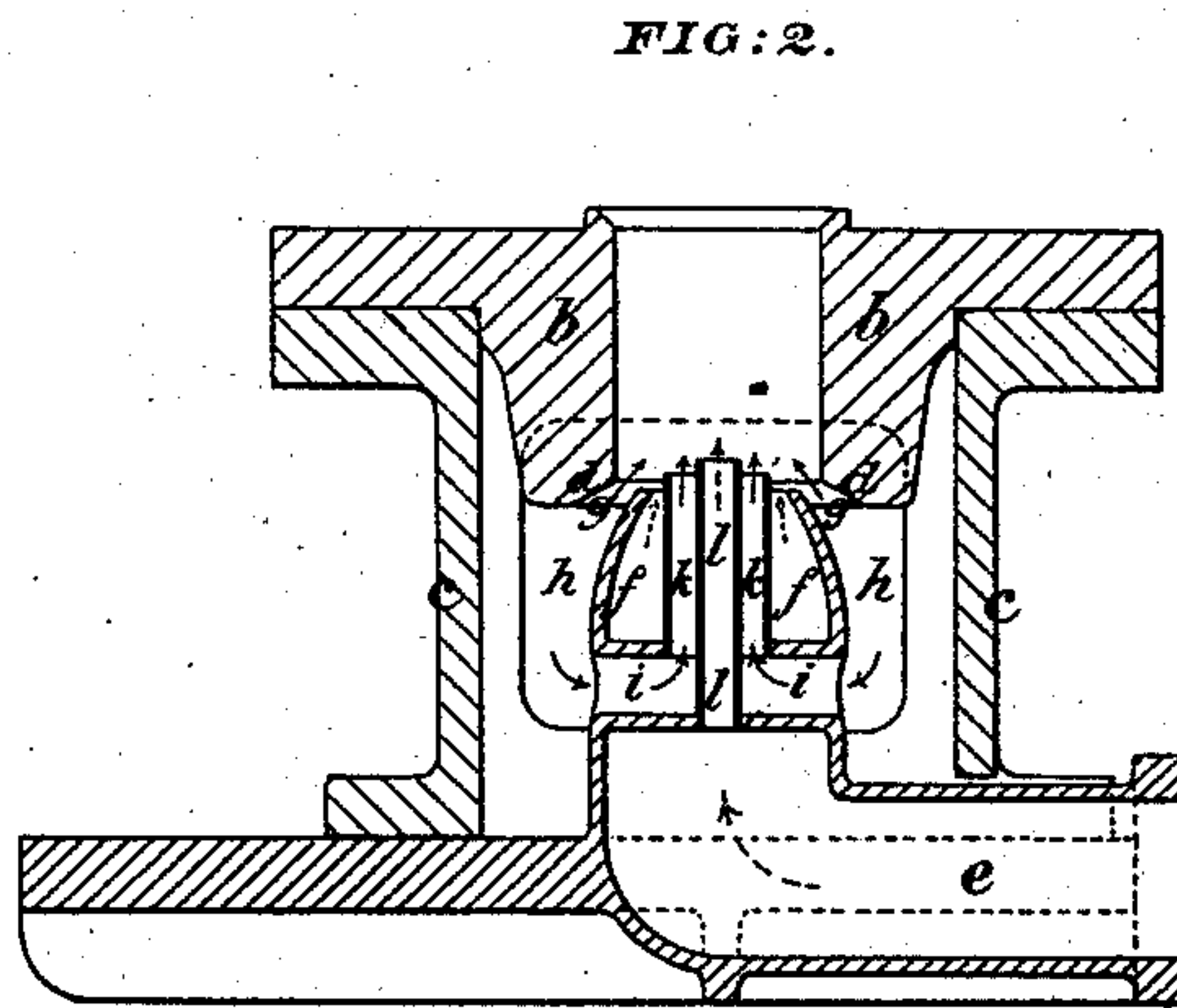
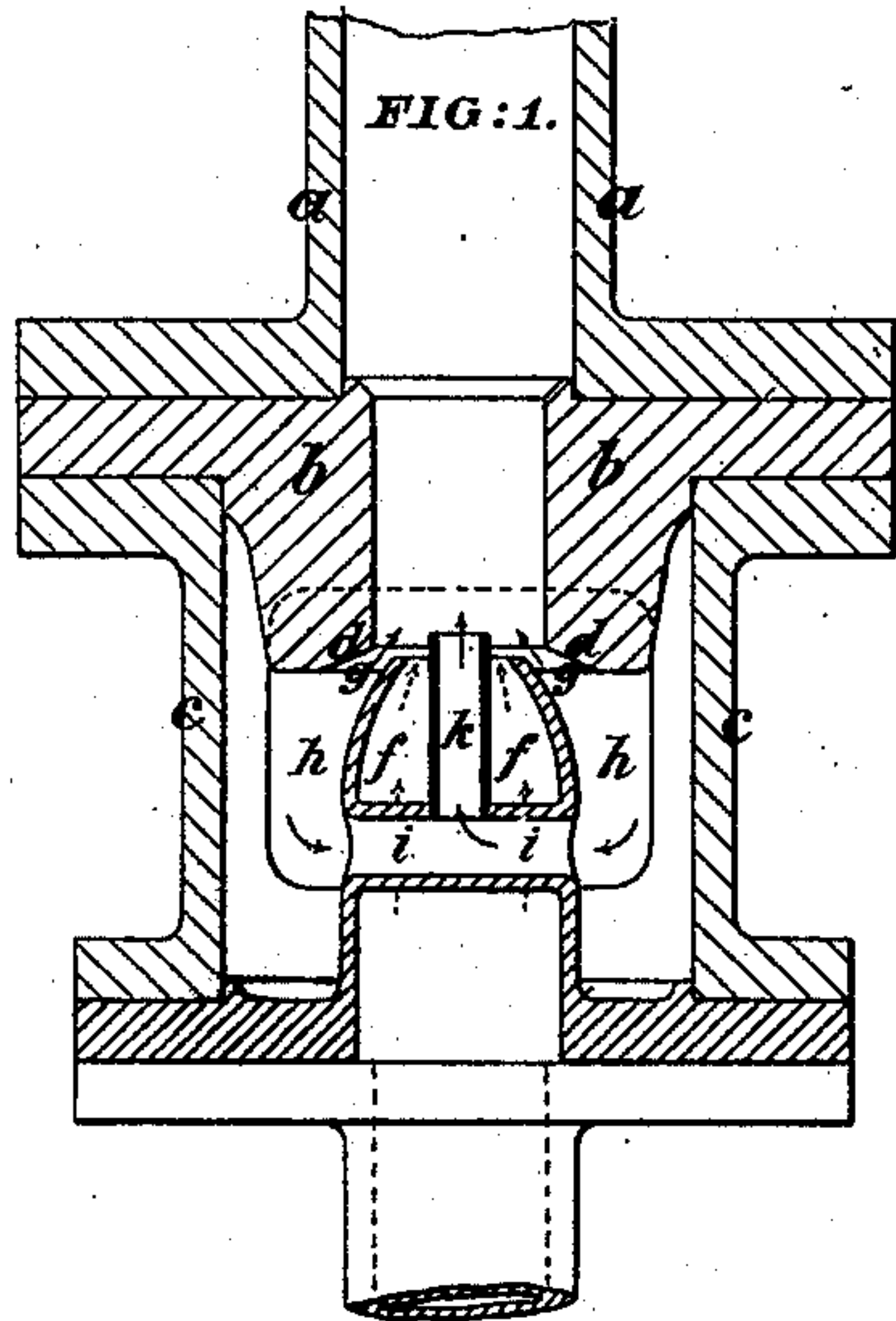
(No Model.)

C. L. JACKSON & J. WESTLEY.

BLEACHING KEIR.

No. 302,138.

Patented July 15, 1884.



Witnesses.

John M. Clayton
James F. John

Inventors.

Charles L. Jackson
and
James Westley
by their Attys
Howson & Sons

UNITED STATES PATENT OFFICE.

CHARLES LOXTON JACKSON AND JAMES WESTLEY, OF BOLTON, COUNTY OF LANCASTER, ENGLAND.

BLEACHING-KEIR.

SPECIFICATION forming part of Letters Patent No. 302,138, dated July 15, 1884.

Application filed January 28, 1884. (No model.) Patented in England June 14, 1883, No. 2,958; in France December 13, 1883, No. 159,160; in Belgium December 18, 1883, No. 63,580, and in Italy January 19, 1884, No. 16,342.

To all whom it may concern:

Be it known that we, CHARLES LOXTON JACKSON and JAMES WESTLEY, subjects of the Queen of Great Britain and Ireland, and residing at Bolton, in the county of Lancaster, England, have invented Improvements in the Construction of Bleaching-Keirs, (for which we obtained a patent in Great Britain, No. 2,958, dated June 14, 1883,) of which the following is a specification.

Our invention relates to the construction of keirs employed for bleaching; and it consists, principally, of improvements to be applied to that part of the keir known as the "puffer-pipe," the object of the said invention being to prevent the boiling up of the liquor through the cloth or other material under operation, and to cause the said liquor to be delivered in a continuous stream upon the top of the cloth or other material, and be drawn downward through the same.

The invention is applicable both to keirs wherein the puffer-pipe is placed inside the keir, and also to those wherein the puffer-pipe is outside the same.

In the annexed drawings the invention is shown, for the sake of illustration, as it would be when applied to the inside of a keir.

Figure 1 is a vertical section of the form of the improved apparatus which we find most convenient for general purposes. The bottom end of the puffer-pipe *a a* is reduced in diameter, so as to form a kind of throat; or, as shown at Fig. 1, it is fitted onto a throat-piece, *b b*, bolted to the upper flange of the casting *c c*, and the lower edge of the same is beveled off in the interior, as at *d d*. The upper end of the steam-pipe *e e* in the liquor-well is provided with a hollow nozzle, *f f*, made conical on the outside, and projecting slightly into the beveled mouth *d d* of the puffer-pipe, leaving a conical annular space, *g g*, between the two, through which the liquor entering the casting *c c* by the openings *h h* is forced (by the suction or vacuum formed by the rush of the steam through the nozzle *f f*) up the puffer-pipe *a a*. There is also a

cross pipe or passage, *i i*, or there may be more than one, through the nozzle *f f* from one side to the other, and from the center of this passage *i i* a vertical pipe, *k k*, is carried upward through the mouth of the nozzle *f f*, projecting slightly above it into the throat *b b* of the puffer-pipe. Through the vertical pipe *k k* a column of liquor also ascends, and the hollow column or jet of steam issuing from the conical nozzle *f f* will force the liquor up the puffer-pipe *a a* in a continuous stream, and the vacuum caused thereby in the liquor-well will draw the hot liquor back again through the cloth or other material under operation. We provide the puffer-pipe at the top (by preference) with a "bonnet" in the form of an inverted dish, inside which we fit a perforated plate suspended by studs, which assists greatly in the even distribution of the liquor over the cloth or other material under operation; but to this bonnet we make no claim as our invention. The course of the liquor is shown by the plain arrows, and that of the steam by the dotted arrows.

Fig. 2 shows a modification of the above, wherein an additional steam-pipe, *l l*, is placed inside the vertical liquor-pipe *k k*.

Fig. 3 is a vertical section, and Fig. 4 a horizontal section, of a modification wherein the cross pipe or passage *i i* is dispensed with, and the lower end of the vertical pipe *k k* is carried through the bottom of the steam-pipe *e e*, and is provided with a "baffle-plate," *m m*, which prevents the return of the column of liquor.

Figs. 5 and 6 show in the vertical and horizontal section a further modification, wherein the cross pipe or passage *i i* is made in an "elbow" form, instead of running straight across the steam-pipe.

Other modifications might be made, to operate in substantially the same manner, without departing from the distinctive features of our invention.

We claim—

In a bleaching-keir provided with a puffer-

pipe, the combination of a steam-pipe hav-
ing a conical nozzle, and an internal liquor-
pipe, with the puffer-pipe having a throat at
its lower end corresponding with the said noz-
5 zle, substantially as and for the purpose set
forth.

In testimony whereof we have signed our

names to this specification in the presence of
two subscribing witnesses.

CHARLES LOXTON JACKSON.
JAMES WESTLEY.

Witnesses:

CHARLES G. DAVIES,
JNO. HUGHES.