

(No Model.)

T. W. JENKINS.

VALVE.

No. 244,753.

Patented July 26, 1881.

Fig. 1.

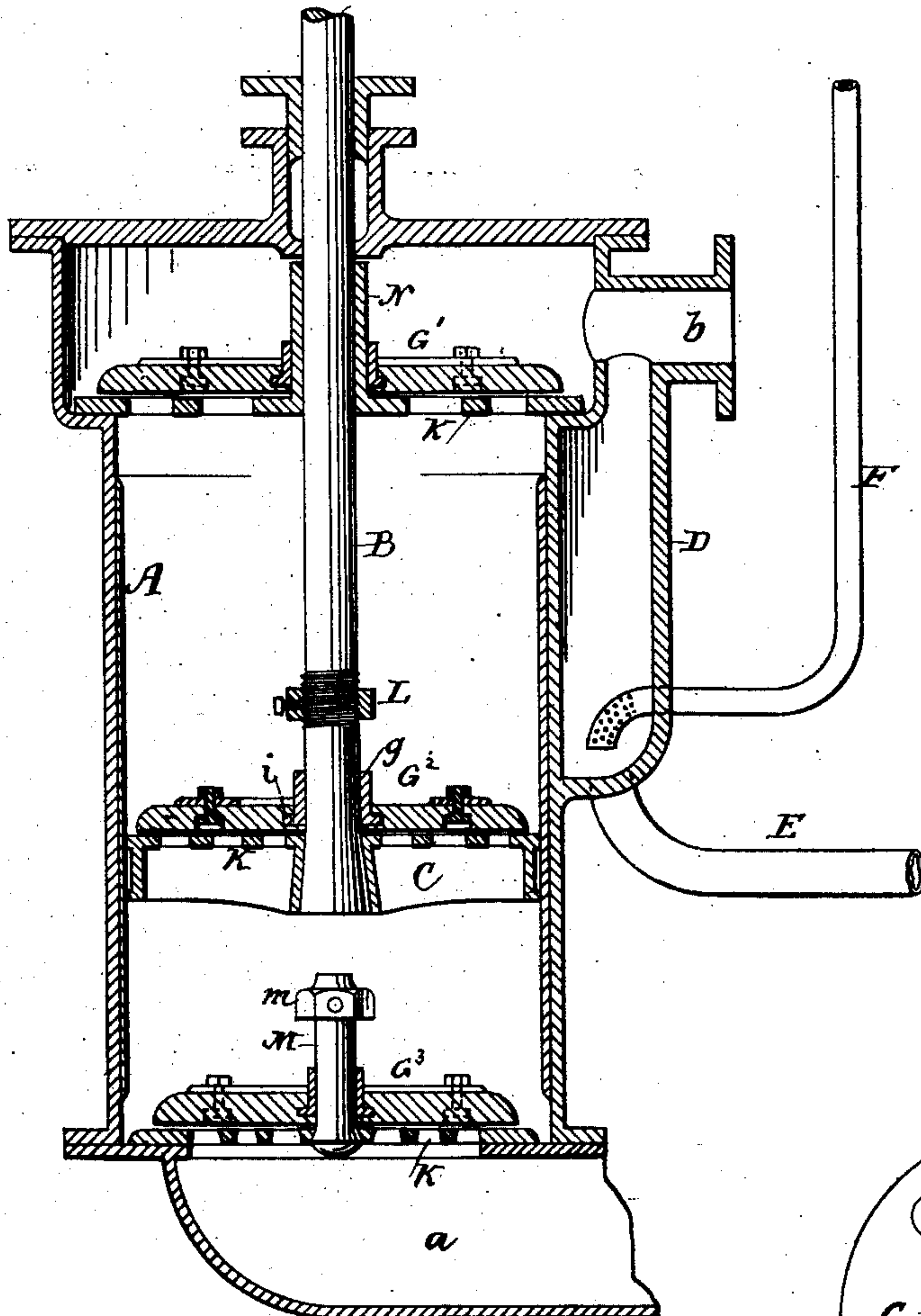


Fig. 2.

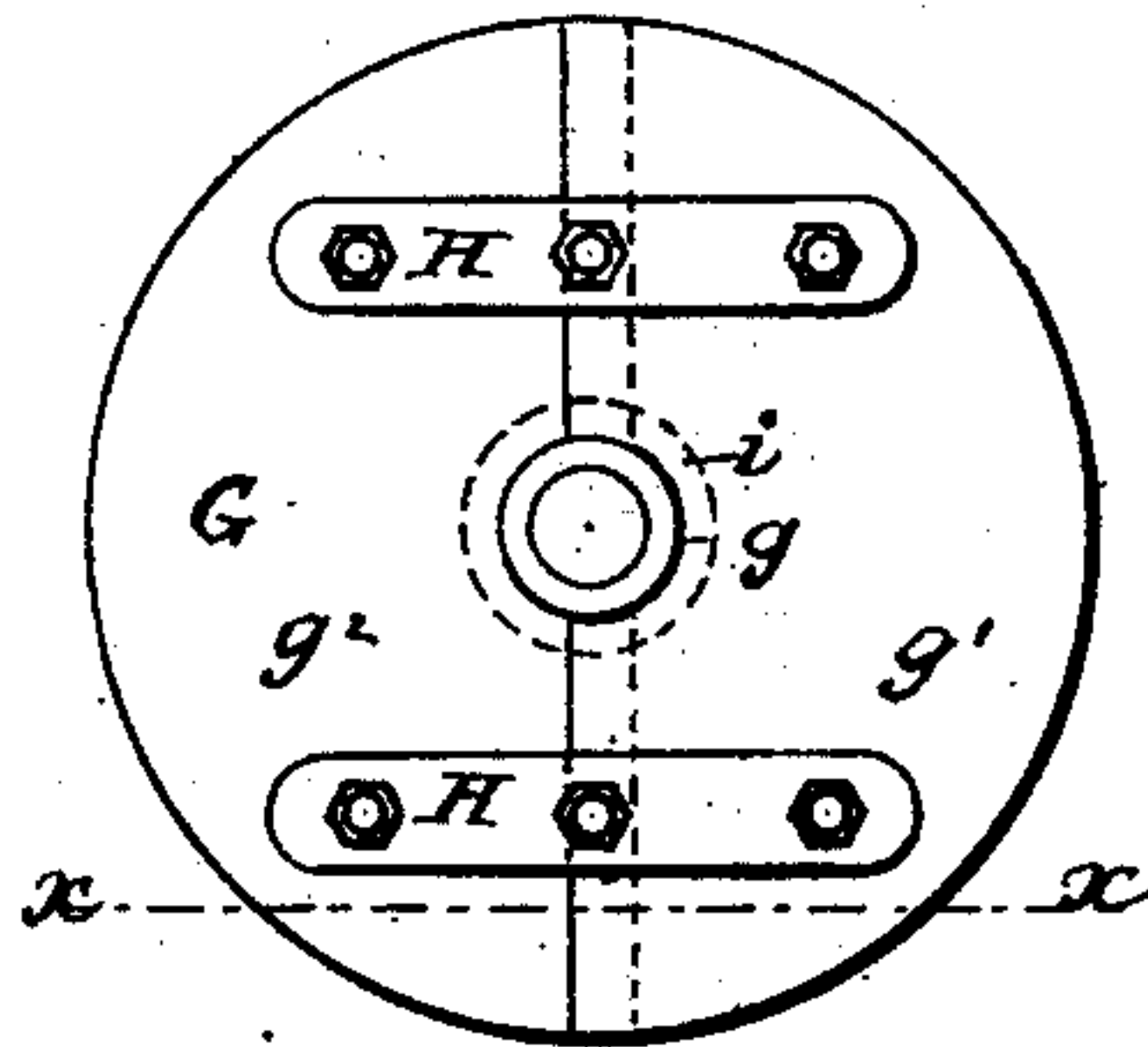
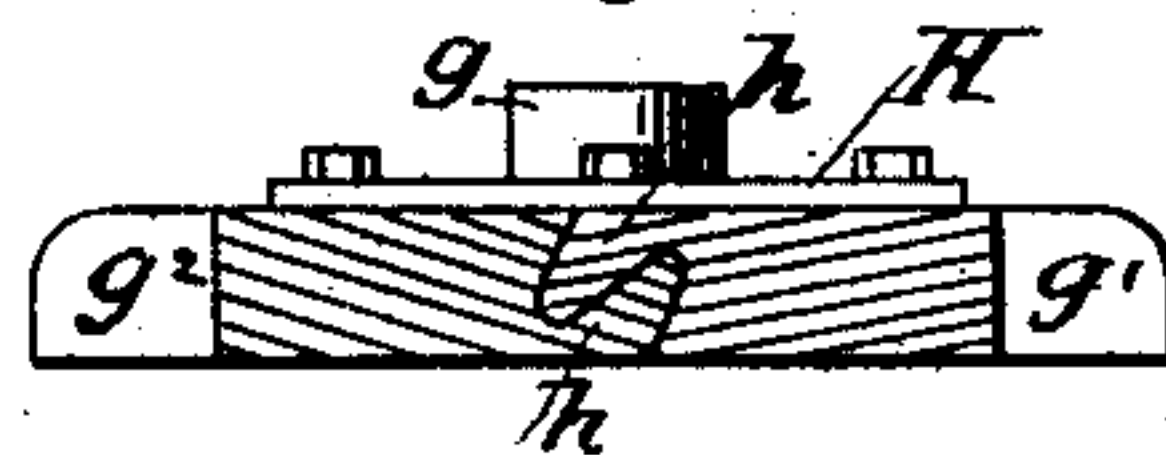


Fig. 3.



Witnesses:
E. E. Masson
W. E. Bowen

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by Chas. J. Hedrick
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UNITED STATES PATENT OFFICE.

THOMAS W. JENKINS, OF PHILADELPHIA, PENNSYLVANIA.

VALVE.

SPECIFICATION forming part of Letters Patent No. 244,753, dated July 26, 1881.

Application filed July 27, 1880. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. JENKINS, a resident of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Valves for Air-Pumps of Condensing-Engines, and for other purposes, of which the following is a specification.

This invention has reference more particularly to valves for the air-pumps of condensing-engines.

The improved valve is constructed of two or more pieces or sections of wood, connected with a metallic collar or guide for regulating the movement of the valve as it lifts or is dropped back to its seat. These sections are connected with the collar detachably, so that they can be readily removed and replaced, when desirable, and are united with each other by a joint that locks itself in whatever way the wood tends to part, whether by warping or shrinking. Any desired size of valve can be obtained.

Heretofore the valves employed have been made usually of rubber, and besides being expensive they are injuriously affected by hot water, and are not lasting.

The first cost of a valve constructed in accordance with this invention is small, while its durability is very great. Moreover, it matters not what temperature is carried in the air-pump or hot-well, the valve is not affected. With this valve therefore the engineer can in bad weather ease the circulating-pump and work with a lighter vacuum. This is often very desirable, inasmuch as when the engines are racing the circulating-pumps, being compelled to lift a heavy column of discharged water, are subjected to great strain. Again, and this is an important advantage, it is possible to change the head or bucket valve without having to disconnect the bucket-rod and take off the pump-cover, all that is required being that the parts be lifted sufficiently for the engineer to introduce his arms to disconnect the wooden pieces or sections from the metallic collar or guide-piece.

By using this valve a drain-pipe may be carried from the valve-chest or cylinder, or both, to the hot-well. This is owing to the capability of the valve to withstand the action of hot water and steam. By means of the hot water carried by the drain-pipe the feed-water can be heated and a considerable amount of fuel saved.

In order that the invention and the manner of carrying the same into effect may be fully understood, the same will now be described in connection with the accompanying drawings, which form a part of this specification, and in which the same letters of reference always indicate like parts.

Figure 1 is a sectional view of an air-pump of a condensing-engine, the pump being provided with valves constructed in accordance with this invention, and the cylinder drain-pipe being in communication with the interior of the hot-well. Fig. 2 is a plan view of the valve; and Fig. 3 a section on line *x x*, Fig. 2.

A is the pump-cylinder, having an inlet, *a*, and discharge *b*; B, the piston or bucket rod, packed in any ordinary or suitable way where it passes through the pump-cover; C, the piston or bucket; D, the hot-well; E, the feed-pipe to the pump, and F, the cylinder drain-pipe. G represents the valves, the head-valve being indicated by G', the bucket-valve by G², and the foot-valve by G³. The valves are all substantially alike, and are composed of a metallic collar, *g*, and two pieces or sections of wood, *g'* *g''*, joined, as shown in Fig. 3, by means of overlapping and interlocking projections *h*, and held together by straps H, which cross the dividing-line between the sections, and are bolted to the latter on opposite sides of said line. It is preferred to have one of the bolts pass through the overlapping projections.

On the lower part of the collar is a flange, *i*, which fits in a corresponding groove in the wooden portion of the valve. The heads of the bolts, and the flange on the collar as well, are sunk in from the bottom, and give the wood a chance to wear without the metallic parts coming in contact with the valve-seats. The wooden pieces or sections *g'* *g''* are made of English elm, as it is of very close grain and not easily split, and becomes supple under the action of steam or hot water. Other wood may, however, be used if desired, or if the English elm cannot be had. The valve-fittings may be the same as now used with rubber valves, except that the guard or disk is dispensed with and replaced by a collar fastened just enough above the valve to allow it the necessary lift.

The application of the valve is clearly shown in Fig. 1. K are the valve-seats. L is a collar on the bucket-rod, to limit the upward move-

ment of the bucket-valve G^2 . Said collar is secured by set-screws. M is a short guide-rod for the foot-valve G^3 , the upward movement of the latter being limited by the collar m . The valve G' moves on a sleeve, N , surrounding the bucket-rod. The lift is limited by the pump-cover. The collar g and straps H give sufficient weight to the valve to insure its closing properly when in operation. The cylinder drain-pipe F is shown as entering the hot-well near the bottom, and as perforated at its lower end. This is the preferable construction, but it is not essential. The effect of the introduction of the drain-pipe into the hot-well is to increase the temperature of the feed-water. It is evident that the temperature of the air-pump will be raised at the same time; but with the valve described this will not injuriously affect the working of the engine.

The improvement in the valve is not limited to air-pumps of condensing-engines, although, as I have already pointed out, it is specially adapted thereto; but it can be applied to other pumps of suitable construction.

By making the valve of wood, as before described, it is obvious that it could be, without much difficulty, replaced in almost any part of the world. The construction of the valve in sections, locked in the manner described, could be applied to other material than wood.

In conclusion, I would observe that although I do not claim to be the first to propose the making of wooden valves, the use of wood in

valves of the construction described is considered a very important part of the invention. 35

Having now fully described my invention and the manner of carrying the same into effect, what I claim as new, and desire to secure by Letters Patent, is—

1. A valve comprising sections of wood, connected with each other and with a central collar or guiding-piece of metal, substantially as described. 40

2. A flat disk-valve comprising wooden sections detachably connected with a metallic collar or guiding-piece, substantially as described. 45

3. The combination of the valve-sections, connecting-straps, and flanged collar, substantially as described.

4. The combination, with the flanged collar, of the sections joined by overlapping interlocking projections and held together by straps and bolts, substantially as described. 50

5. The combination of a guiding rod or sleeve, a collar surrounding the same and movable thereon, valve-sections detachably connected with said collar, and a fixed collar, or means for limiting the endwise movement of the first-named collar, substantially as described. 55

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 60

THOS. W. JENKINS.

Attest:

ROBERT W. FERGUSON,
WM. M. MCKNIGHT.