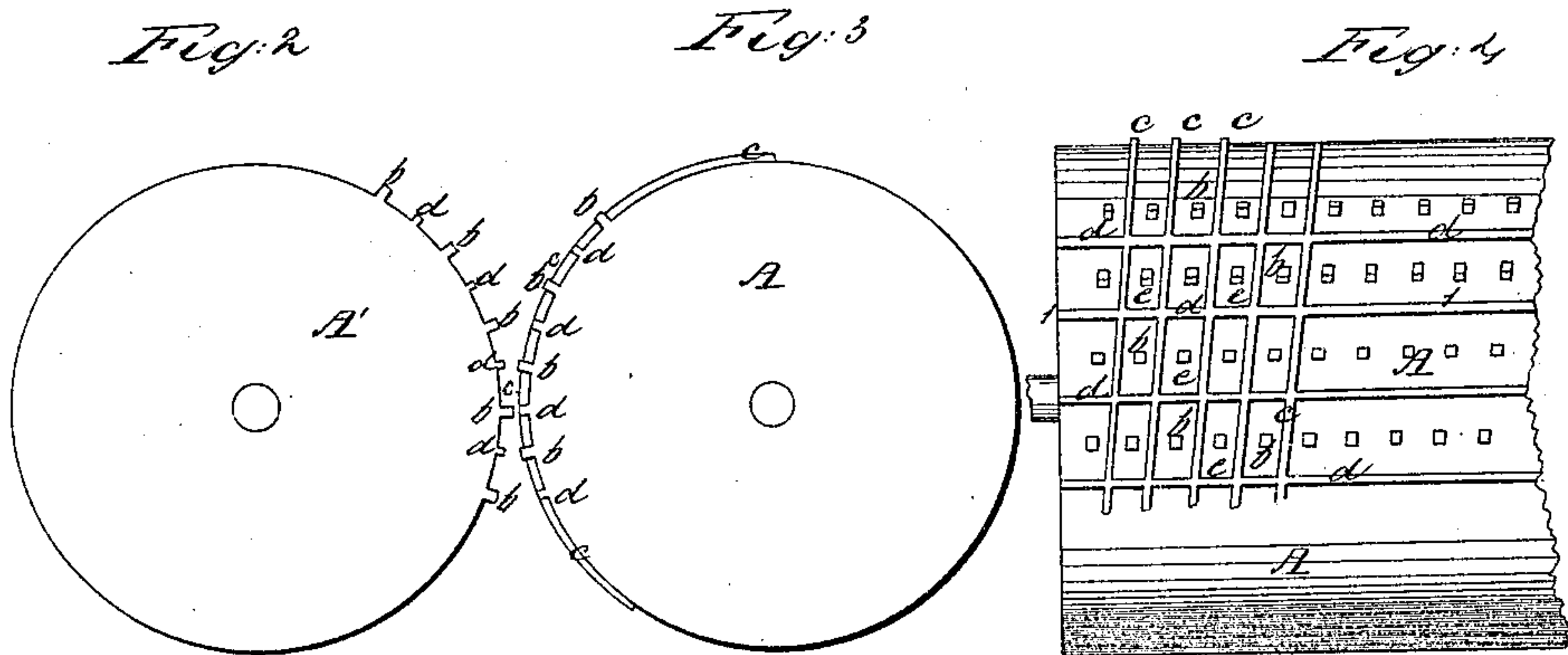
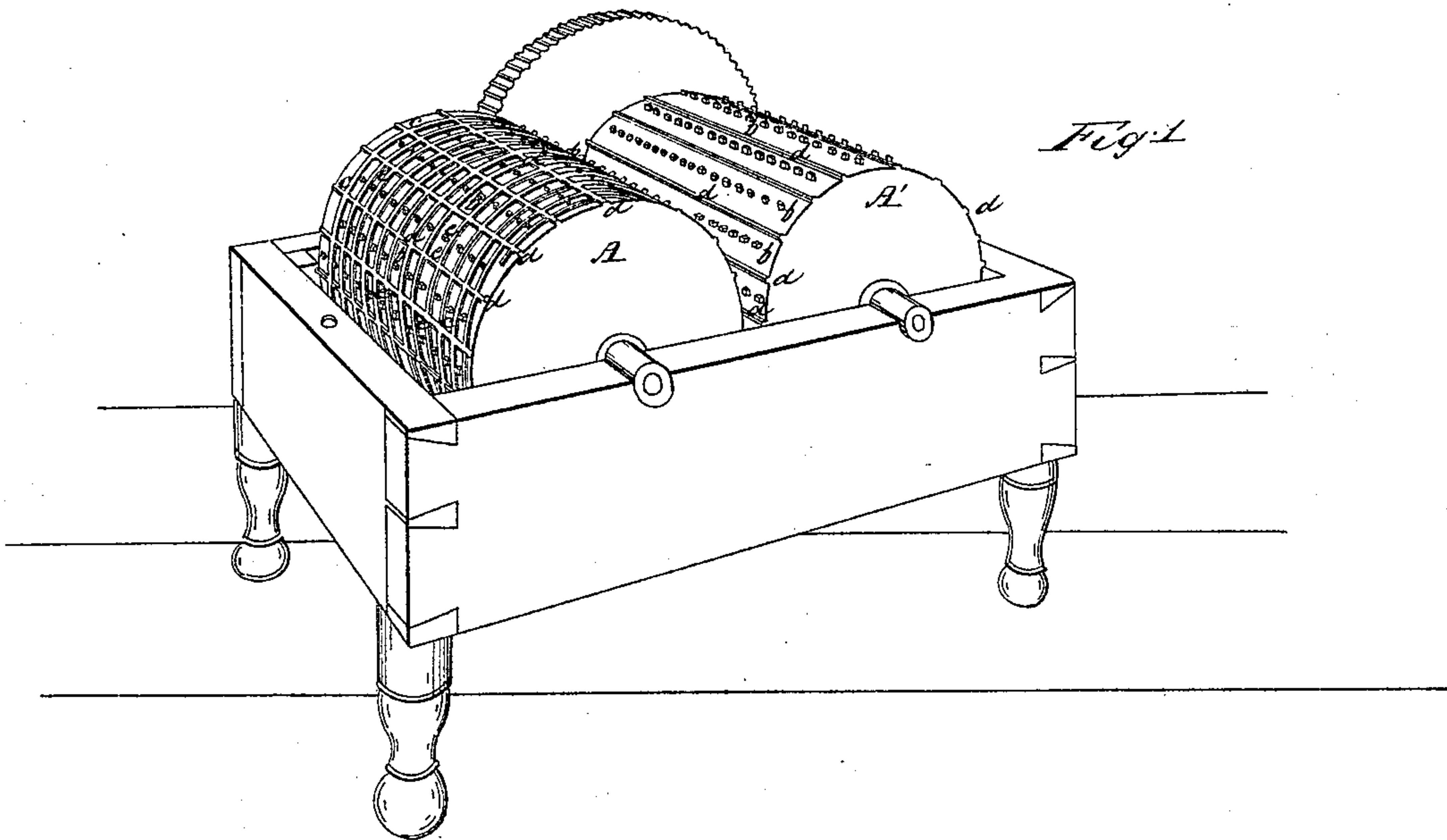


W. O. Hickok, Cider Mill

N^o 13,839.

Patented Nov. 20, 1855.



Witnesses.
L. A. Snyder
Hamilton Alcock

Inventor
W. O. Hickok

UNITED STATES PATENT OFFICE.

W. O. HICKOK, OF HARRISBURG, PENNSYLVANIA.

MILL FOR GRINDING APPLES.

Specification forming part of Letters Patent No. 13,839, dated November 20, 1855; Reissued March 26, 1861, No. 1,161.

To all whom it may concern:

Be it known that I, W. O. HICKOK, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented a new and useful Improvement on Machines for Grinding Apples and other Like Substances; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, is a perspective view, showing the improvement applied; Figs. 2, and 3, end views of the cylinders, showing the relative arrangement of the breakers, helical ribs and teeth; and Fig. 4, a sectional side view of one of the same, like letters indicating the same parts when on the several figures.

The nature of my invention consists in constructing and applying breakers to the cylinders of mills for grinding apples, &c., so that all the small lumps which are torn from the apples by the teeth of the cylinders in grinding the same, shall be completely crushed by the said breakers of one cylinder operating in combination with the teeth of the other cylinder.

The improvement is applied, in this instance, to the machine for grinding apples, &c., improved and patented by Samuel W. Powel, December 4th 1849.

Referring to the accompanying drawings, A, A', are the cylinders; *b—b*, the teeth; *c—c*, the helical ribs; and *d—d*, the breakers. The teeth (*b*) are formed on each cylinder in regular longitudinal rows parallel with the same; and the helical ribs (*c*) formed so as to pass spirally around (either one or both) cylinders and between every two teeth of each row, as described and set forth in the specification of the said Powel. During the operation of the said Powel's improved cylinders, most of the small lumps which are torn from the apples, pass from between the cylinders in a solid or uncrushed condition, and consequently a large quantity of the juice of the fruit is lost, it being almost impossible to express it from these uncrushed lumps by the subsequent operation in the press. In order to effect the crushing of these lumps while they are pass-

ing between the cylinders, I form thereon a continuous longitudinal projection or breaker (*d*) midway between each two rows of the teeth (*b—b*). These breakers (*d*) are about of the same thickness and height as the helical ribs (*c*)—the two devices intersecting each other upon the cylinder, so as to form shallow depressions (*e—e*) upon the face of the cylinder; and the teeth (*b—b*) projecting radially from the middle thereof and also a little farther than the breakers and helical ribs, as shown in the drawings. I apply the breakers (*d*) on both the fast and slow cylinders of the machine—but sometimes dispense with the helical ribs (*c*) on one of the cylinders, as shown in the drawings. I sometimes also serrate the upper edge of some or all the breakers as shown at 1—1.

I construct my improved cylinders, of cast iron, and first mold them from a pattern having the breakers (*d—d*) and the helical ribs (*c—c*) attached thereto. I then place in the same mold a shell of thin metal adapted in its curve to suit the mold formed, and having also longitudinal rows of holes pierced through it so that each hole shall come respectively opposite to the place where the tooth is to be formed. I then take a piercing tool, adapted for the purpose, and pass it sufficiently far through the holes in the shell to form a matrix in the sand for each of the teeth—the shell is then removed and the mold finished in the usual manner. The part of the piercing tool which forms the matrices, is of course, the size and form of the intended teeth, and should be made with a shoulder so as to prevent inequality in the depth of the matrices.

Operation: The two cylinders (A, A') running at unequal speed, the teeth of each successive row of the more rapidly rotating one, cut or tear out small lumps from the broken apples which fall from above and these lumps being caught by the breaker of the opposite cylinder, are turned over and crushed against the same by the action of the teeth and contiguous breaker of the fast cylinder—thus effectually crushing and adapting the lumps for yielding their juice when subjected to the action of the press.

I do not claim “the two cylinders on whose surfaces grooved and fluted helical ribs are

formed, and which move with different velocities," as these were patented by Samuel W. Powel in 1849; but

What I claim as my invention and desire
5 to secure by Letters Patent is,

I claim the breakers (*d—d'*) constructed and applied substantially and for the purpose as described and set forth—whether the said breakers are used in combination
10 with the helical ribs (*c—c*) and the teeth

(*b—b*) so as to produce a separate and distinct depression (*e*) around each tooth as described and set forth; or whether the said breakers are used in combination with the teeth alone (as shown in cylinder A').

W. O. HICKOK.

Witnesses:

HAMILTON ALRICKS,
C. A. SNYDER.

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