

No. 675,035.

Patented May 28, 1901.

C. T. DRAKE.
MACHINE FOR MIXING CONCRETE.

(Application filed July 18, 1899.)

(No Model.)

Fig. 1

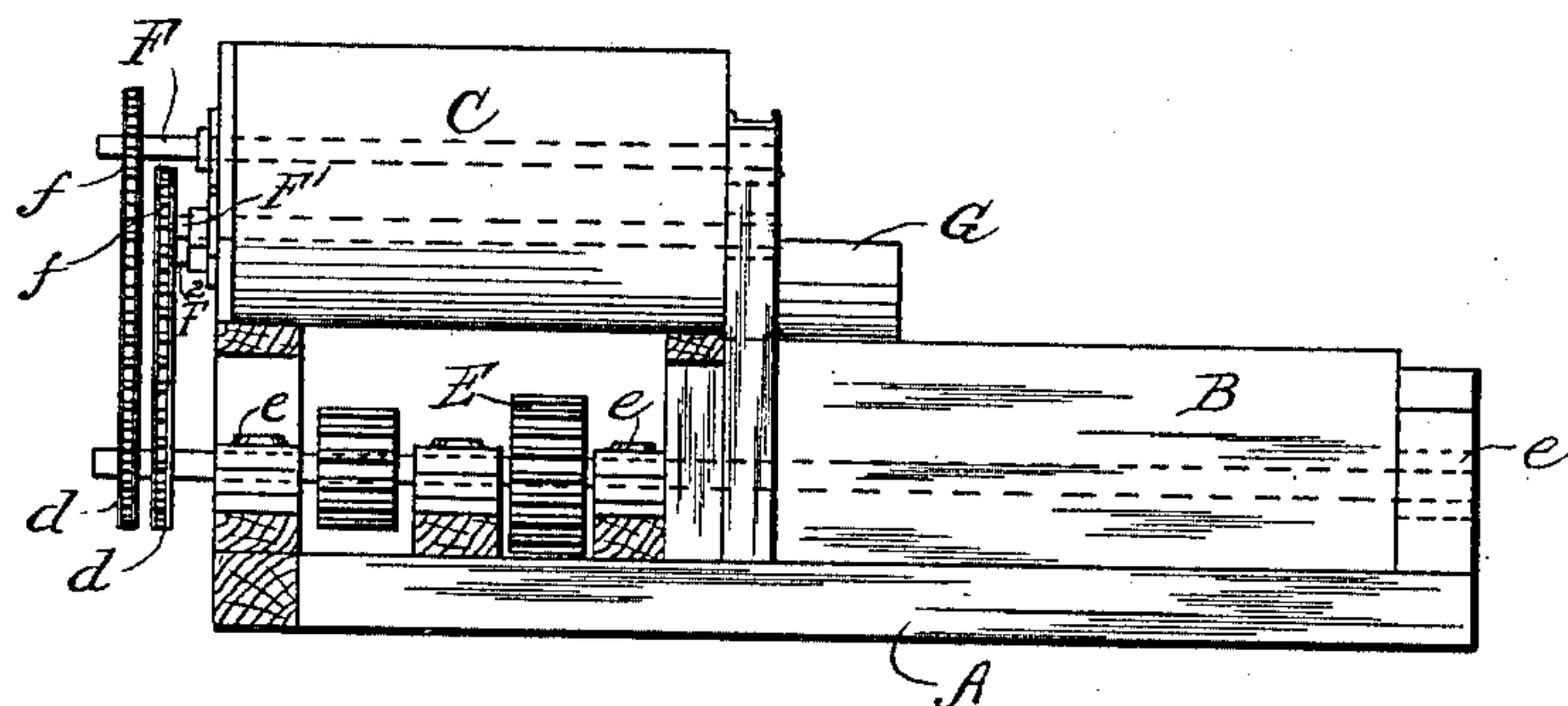


Fig. 2

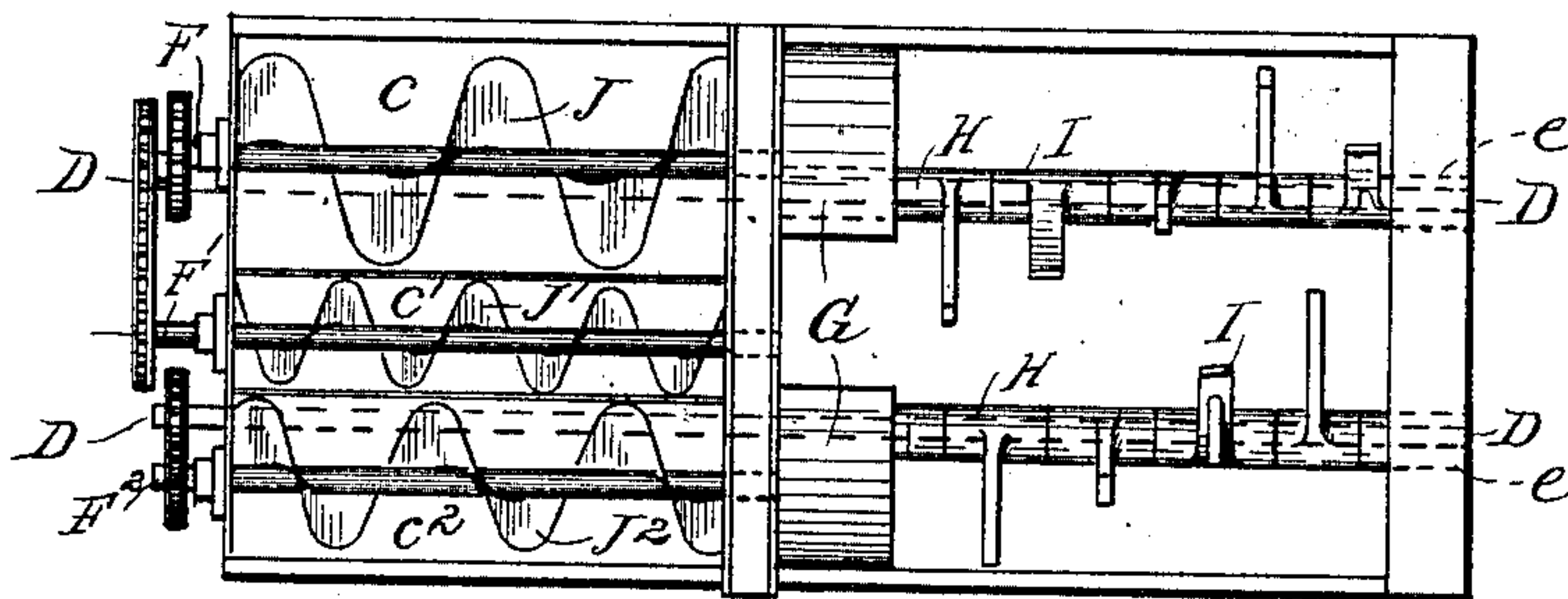
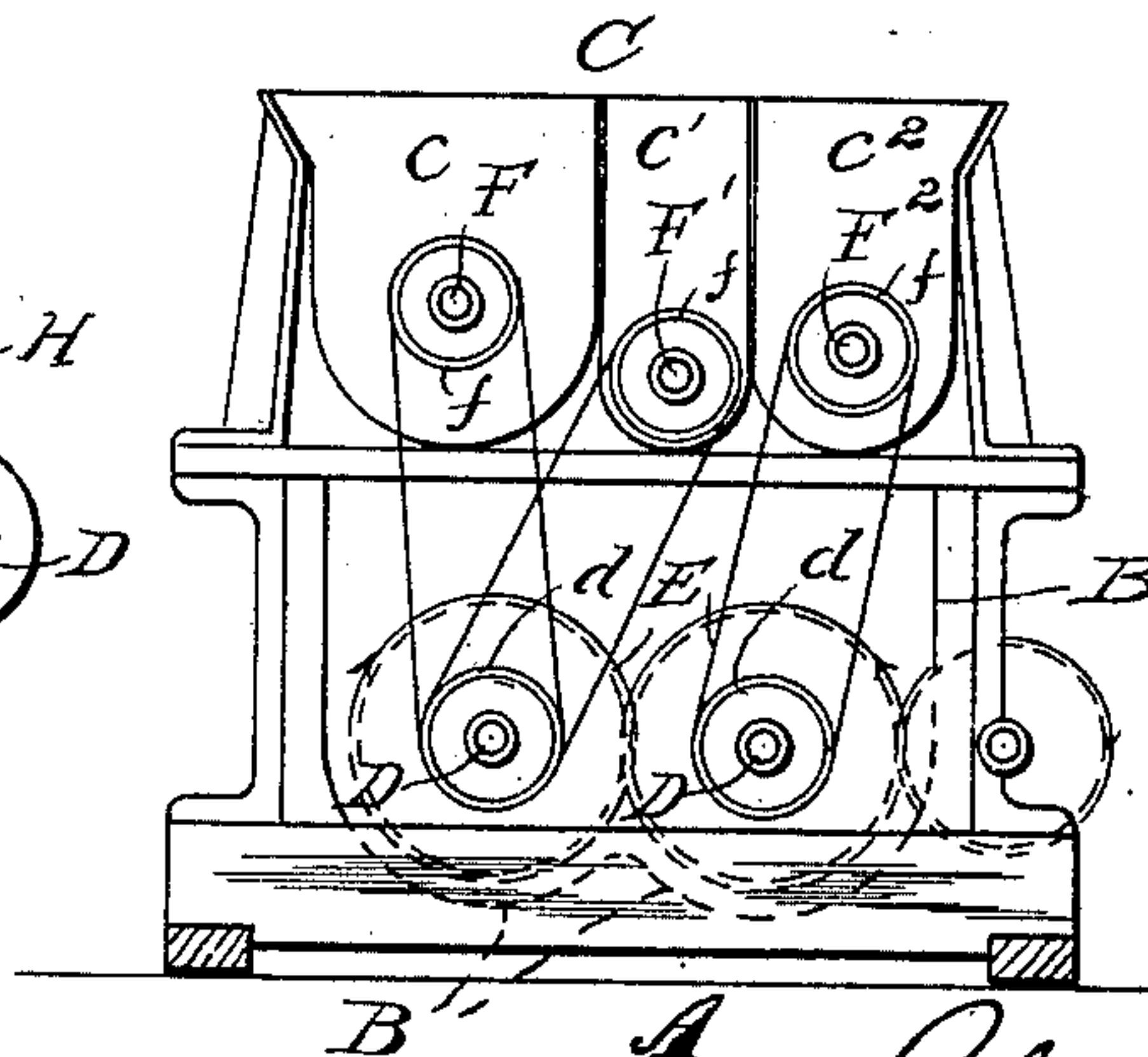
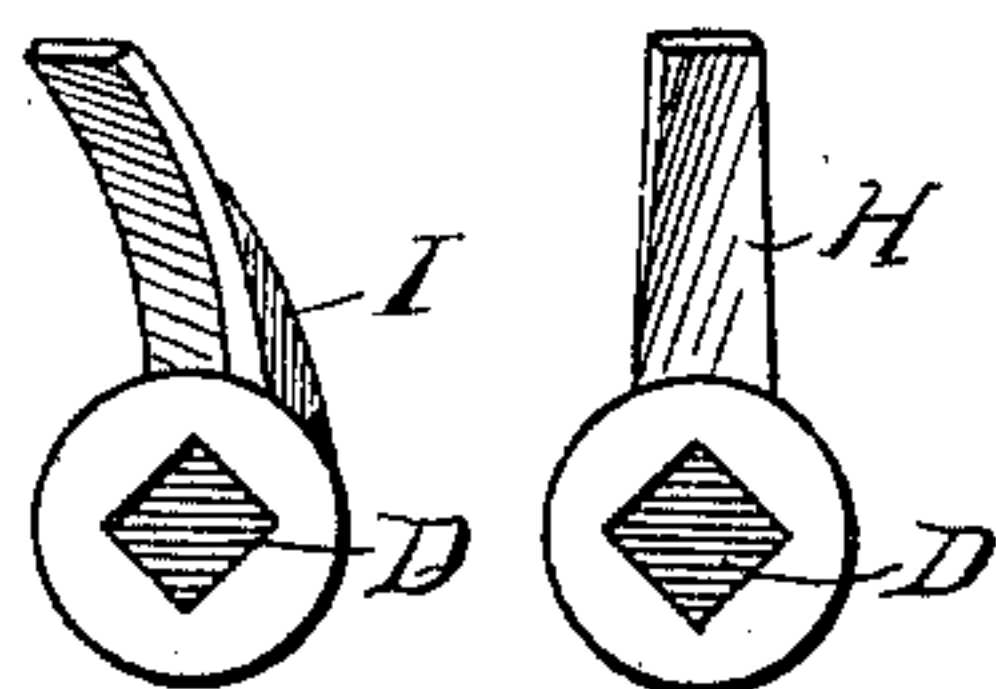


Fig. 3

Fig. 4 Fig. 5



Witnesses:

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UNITED STATES PATENT OFFICE.

CHESTER T. DRAKE, OF CHICAGO, ILLINOIS.

MACHINE FOR MIXING CONCRETE.

SPECIFICATION forming part of Letters Patent No. 675,035, dated May 28, 1901.

Application filed July 18, 1899. Serial No. 724,238. (No model.)

To all whom it may concern:

Be it known that I, CHESTER T. DRAKE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Mixing Concrete, of which the following is a specification.

My invention relates to machines having one or more shafts armed with knife-bars which extend from the shaft radially and as the shaft is revolved pass through the concrete material beneath the shaft, so as to mix the ingredients.

The nature of my invention consists in part in the arrangement upon a rotating shaft of knives of peculiar shapes adapted to thoroughly and rapidly mix the several ingredients of the concrete.

It consists also in part in the arrangement of a series of hoppers provided with "spiral conveyers," which may be revolved at any speed desired, so as to "feed" the ingredients which are thrown into the separate hoppers respectively as fast as may be desired and so as to vary the proportion of the sand, cement, and stone entering into the mixing-hopper.

In the drawings, Figure 1 is a side elevation of my machine. Fig. 2 is a plan view of the machine as seen from above it. Fig. 3 is an end elevation showing the driving-wheels at the feed end of the machine. Fig. 4 is a view of one of the "shovel-arms" of the mixing-shaft, and Fig. 5 is a view of one of the "knife-arms" of the mixing-shaft.

A represents the strong wooden frame and bed of the machine.

B represents the plate-metal hopper, in which the materials are mixed by the revolving arms H I, which are secured in strong metal hubs which fit upon the square shafts D.

C, C', and C² are plate-metal hoppers, which are provided, respectively, with the spiral conveyers J J' J² upon the shafts F F', F², respectively, and these shafts are journaled, so that the lower side of each spiral conveyer will reach to the interior bottom surface of its hopper and crowd the material (*i. e.*, stone shoveled into hopper C, sand shoveled into hopper C², and cement shoveled into hopper C') toward and out of the discharge end of its

hopper, so that the ingredient materials will fall into the mixing-hopper beneath and beyond the receiving-hoppers.

The square shafts D have journals turned upon them to fit the boxes *e* and are provided with "twin" gears E, so that their motion shall be uniform, and another gear-wheel upon one of the shafts receives the power which drives them.

Strong metal knife-arms H and shovel-arms I are secured in the hubs, which fit upon the shafts D and revolve with the shafts and "stir together" the separate materials within the mixing-hopper. The disposition of the knife-arms H and shovel-arms I upon the respective shafts is such that as they are rotated the mixing-blades on one of the shafts will work in the spaces next adjacent the respective sides of the shovel-blades. The shovel-arms present their wide flat surface to the material as they revolve and "scoop up" the material, carry it upward, and allow it to fall to the bottom turned "upside down," so as to more thoroughly intermix the ingredients. The knife-arms present their narrow edges to the material as they revolve, and all the arms H I stand "aslant" or obliquely on shafts D as much as may be desired, so as to crowd the material toward the discharge end of the mixing-hopper as they revolve, and all should extend downward to the inner bottom surface of the mixing-hopper.

The shafts D have sprocket-wheels *d* upon them, and the spiral-conveyer shafts have wheels *f f f*, respectively, of any size desired, and sprocket-chains communicate power from wheels *d* to wheels *f*, so as to drive the spiral conveyers at any desired rate of speed relative to each other, and thus regulate the proportions of the ingredients entering into the mass of concrete or vary said proportions by changing the sprocket-wheels.

I claim as my invention—

1. In a concrete-mixer, the combination with a casing, of a plurality of shafts therein, means for operating the shafts, shovel-blades on one of said shafts, and mixer-blades on the opposite shaft arranged and adapted to work in the spaces next adjacent the respective sides of the shovel-blades substantially as described.

2. In a concrete-mixer, the combination with a casing, of parallel shafts mounted therein, means for rotating the shafts, shovel and mixer blades mounted on the respective
5 shafts and so disposed that in operation the shovel-blades will pass between a pair of mixer-blades, substantially as described.

3. In combination with a concrete-mixer, of a supporting-framework, hoppers therein at
10 substantially the same level and adjacent said mixer, and chutes G at opposite points on the framework for directing the material discharged from the outer hoppers toward the center hopper, substantially as described.

15 4. In a concrete-mixer, the combination with a mixing-chamber, of parallel shafts therein, mixer-blades on the shafts, a series of hoppers adjacent the mixing-chamber, and means for directing material from all of the

hoppers to a point intermediate the blade- 20 carrying shafts, substantially as described.

5. In a concrete-mixer, the combination with a chamber, of parallel shafts in said chamber, blades on the shafts, gears at one end of the shafts for operating the same, of a
25 series of hoppers adjacent the chamber arranged substantially side by side, means for forcibly ejecting material from the hoppers into the mixing-chamber, and gearing on said
30 ejecting means in mesh with the gearing on the shafts, and means for operating the same simultaneously and proportionately, substantially as described.

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Witnesses:

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