J. W. LEITCH.

CHILLING MOLTEN MATERIAL AND OBTAINING THE SOLID IN A SUBDIVIDED STATE.

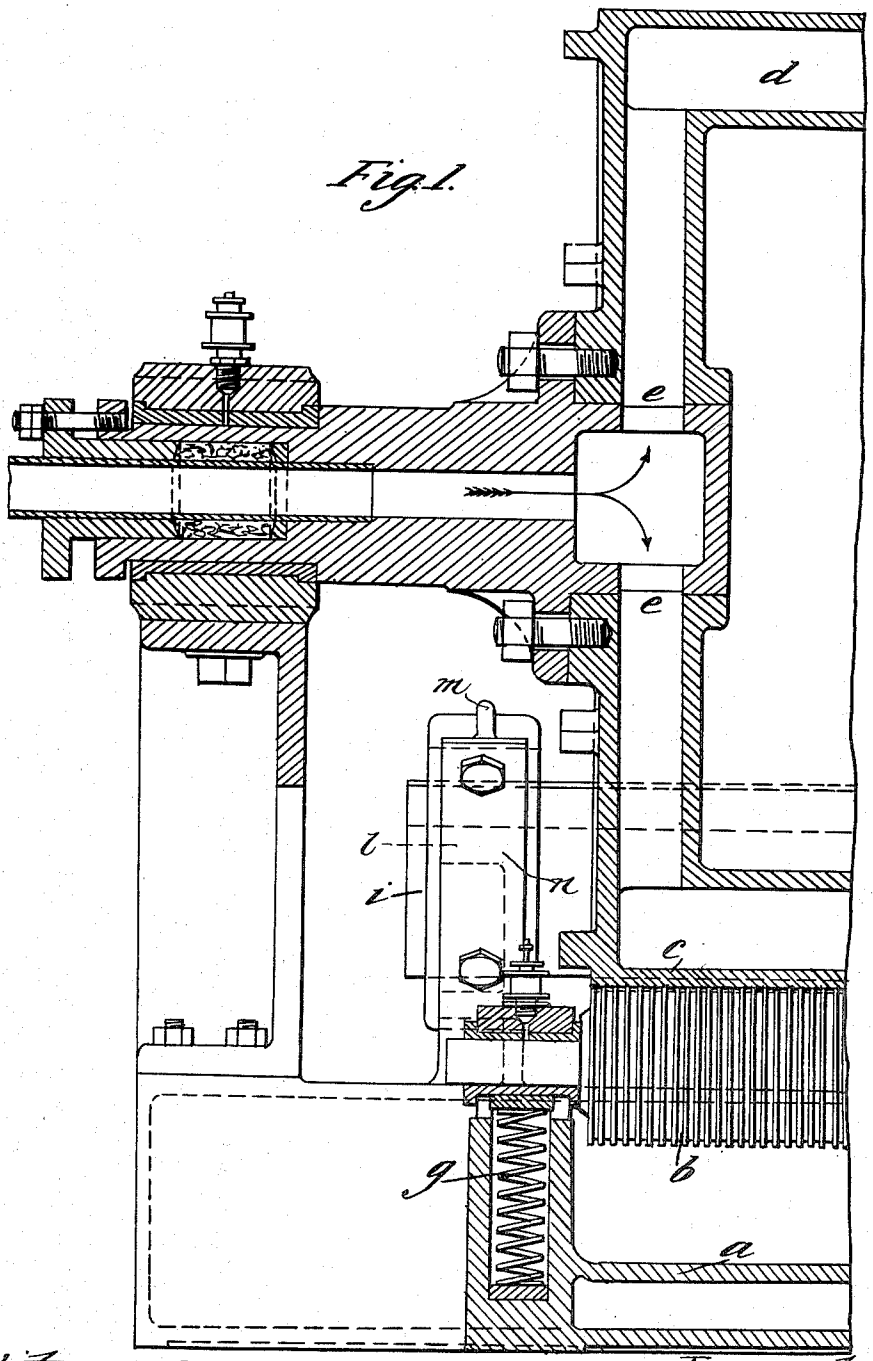
APPLICATION FILED JAN. 10, 1916.

1,226,542.

Patented May 15, 1917.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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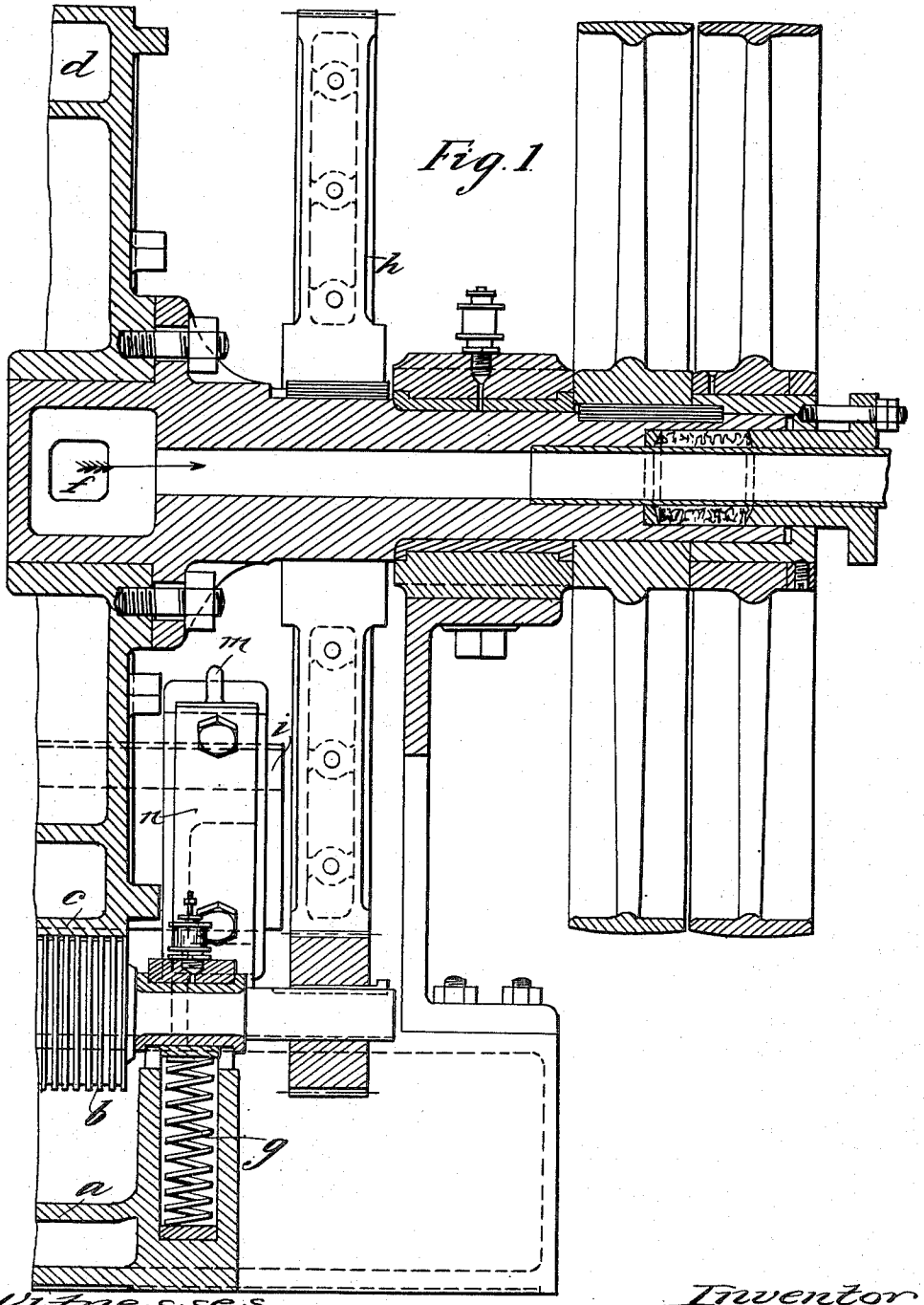
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3 SHEETS—SHEET 2.

Fig. 1.



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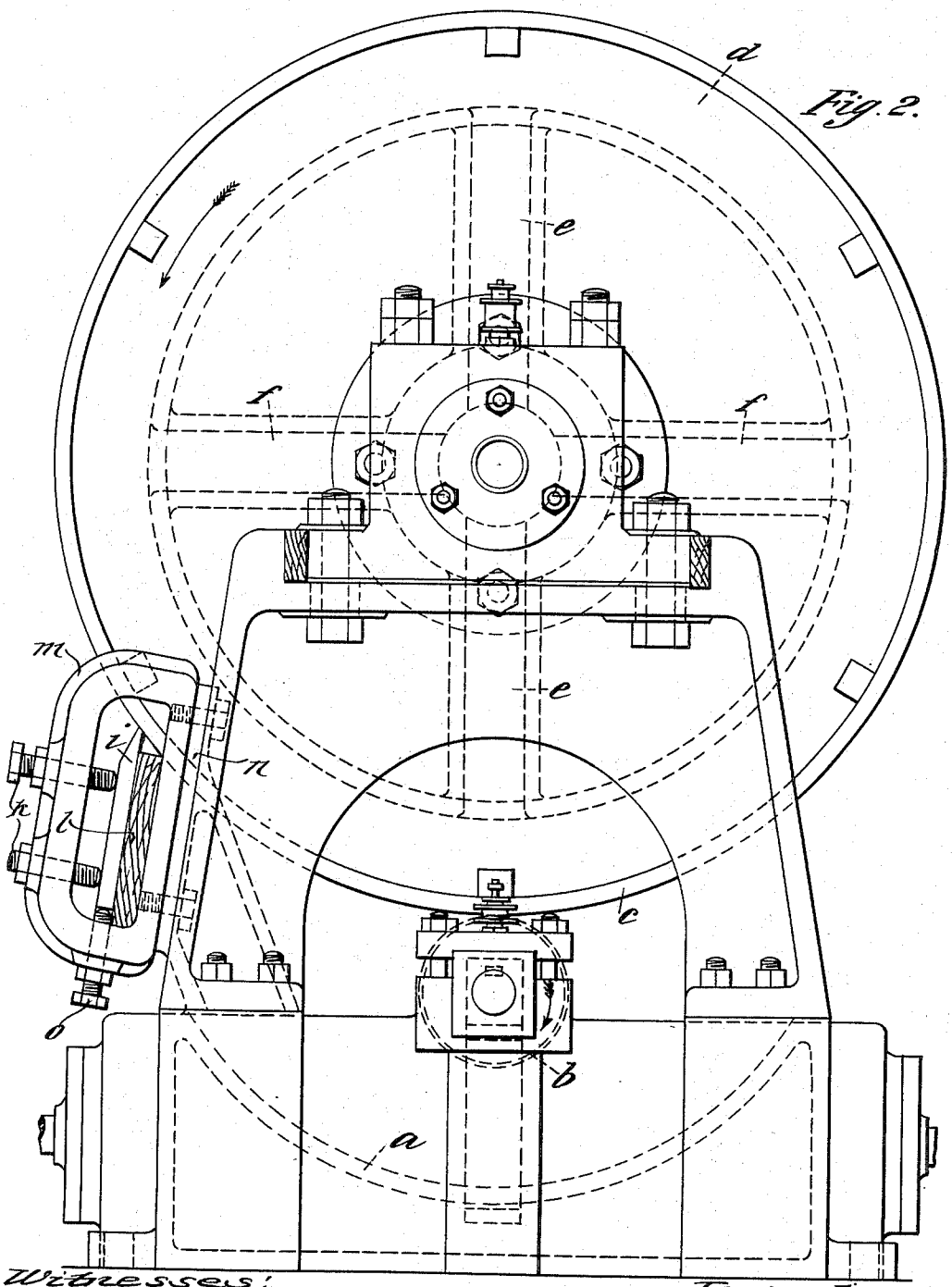
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3 SHEETS—SHEET 3.

Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN W. LEITCH, OF HUDDERSFIELD, ENGLAND.

CHILLING MOLTEN MATERIAL AND OBTAINING THE SOLID IN A SUBDIVIDED STATE.

1,226,542. Specification of Letters Patent. Patented May 15, 1917.

Application filed January 10, 1916. Serial No. 71,290.

To all whom it may concern:

Be it known that I, JOHN WALKER LEITCH, a subject of the King of Great Britain, residing in Huddersfield, England, have invented certain new and useful Improvements in Chilling Molten Material and Obtaining the Solid in a Subdivided State, of which the following is a specification.

A common mode of chilling molten material and obtaining the solid in a subdivided state consists in applying the molten material by means of a feeding roller to the surface of a chilling cylinder and removing by a scraper the layer which adheres to and solidifies upon the cylinder. A sufficiently brittle material, such as tolidin (4:4′-diamino-3:3′-dimethyl-diphenyl), is thus obtained in the form of flakes accompanied by more or less powder.

My invention relates to an improvement in apparatus for practising this mode of chilling whereby the resistance which the material offers to removal by the knife or scraper is diminished and the size of the flakes and the proportion of fine powder produced are variable.

For this purpose I use as the feeding roller a roller having grooves cut in its periphery at right angles to its axis, or patterned in some other simple manner. The chilling cylinder is then printed with the material in strips or some other pattern and the material offers less resistance to removal by the knife or scraper because it has room to expand as it meets the cutting edge. Furthermore, the size of the flakes and the proportion of fine powder produced may be varied to some extent by varying the width of the strips thus printed.

The feeding roller may be adapted to be heated by steam passing through it, or in other suitable manner, for the purpose of melting any material which may have solidified on it after a stoppage.

In the accompanying drawings, Figure 1 is a broken longitudinal section and Fig. 2 an end elevation of a chilling machine constructed according to the invention.

The molten material, for instance tolidin, contained in the steam-jacketed trough *a*, is taken up by the grooved roller *b* and transferred to the chilling cylinder *c*. The latter has double walls and through the space *d* between these, water is circulated, entering through passages *e* and leaving through passages *f* at right angles to the passages *e*, as indicated by the arrows.

The roller *b* is kept in contact with the cylinder *c* by springs *g* and is driven by the gear *h* from the trunnion of the cylinder. The knife or scraper is shown at *i*. It is held at each end by set screws *k* against a block *l* in a frame *m* bolted to a standard *n* on the base of the machine. The pressure with which this scraper bears against the chilling cylinder is adjusted by screws *o*.

Having thus described the said invention and the best means I know of carrying the same into practical effect,

I claim:—

1. A machine for chilling molten material and obtaining it in the solid state, comprising a positively driven pattern cylinder revolving on its axis, a bath of molten material wherein the cylinder is partially immersed, a second positively driven cylinder revolving on its axis at the same peripheral speed as, in opposite direction to and in close peripheral contact with the pattern cylinder, means for cooling the peripheral surface of the second cylinder, and a scraper adapted to remove the solidified material from the second cylinder.

2. A machine for chilling molten material and obtaining it in the solid state, comprising a positively driven grooved cylinder revolving on its axis, a bath of molten material wherein the cylinder is partially immersed, a second positively driven cylinder revolving on its axis at the same peripheral speed as, in opposite direction to and in close peripheral contact with the grooved cylinder, means for cooling the peripheral surface of the second cylinder, and a scraper adapted to remove the solidified material from the second cylinder.

3. A machine for chilling molten material and obtaining it in the solid state, comprising a positively driven cylinder revolving on its axis, a bath of the molten material wherein the cylinder is partially immersed, a second positively driven cylinder revolving on its axis at the same peripheral speed as, in opposite direction to and with its periphery in close contact with that of the first cylinder, a jacket to the said second cylinder, which jacket constitutes the said periphery, passages for the inlet of cooling fluid into, and passages for the outlet of cooling fluid from, the said

jacket so arranged relatively to each other that the fluid must flow around the cylinder, means for circulating cooling fluid through the said passages, and a scraper adapted to remove the solidified material from the said periphery.

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

JOHN W. LEITCH.

Witnesses:
WM. MCGEE,
F. CHAMBERS.