L. C. SANDS.

SAND REEL.

APPLICATION FILED JAN. 16, 1909.

938,609. Patented Nov. 2, 1909.

Fig. 1.

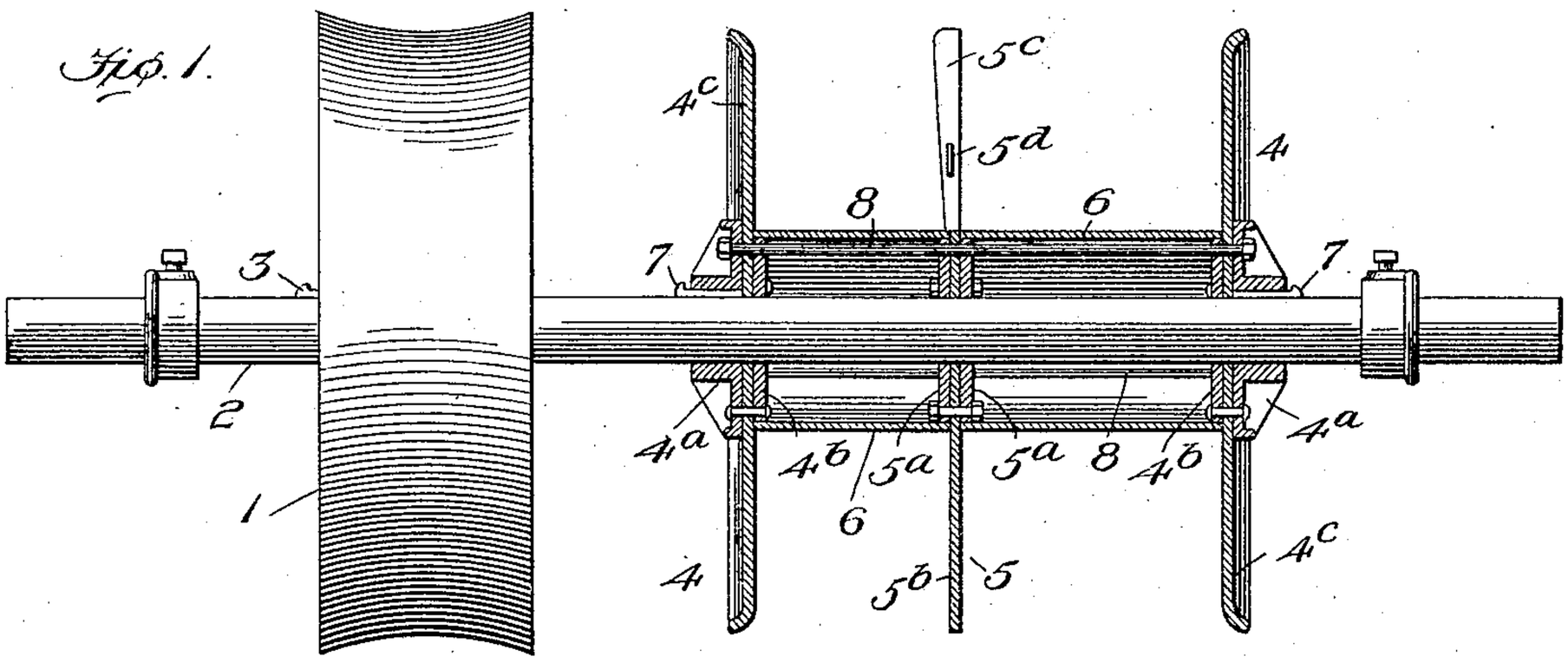


Fig. 2.

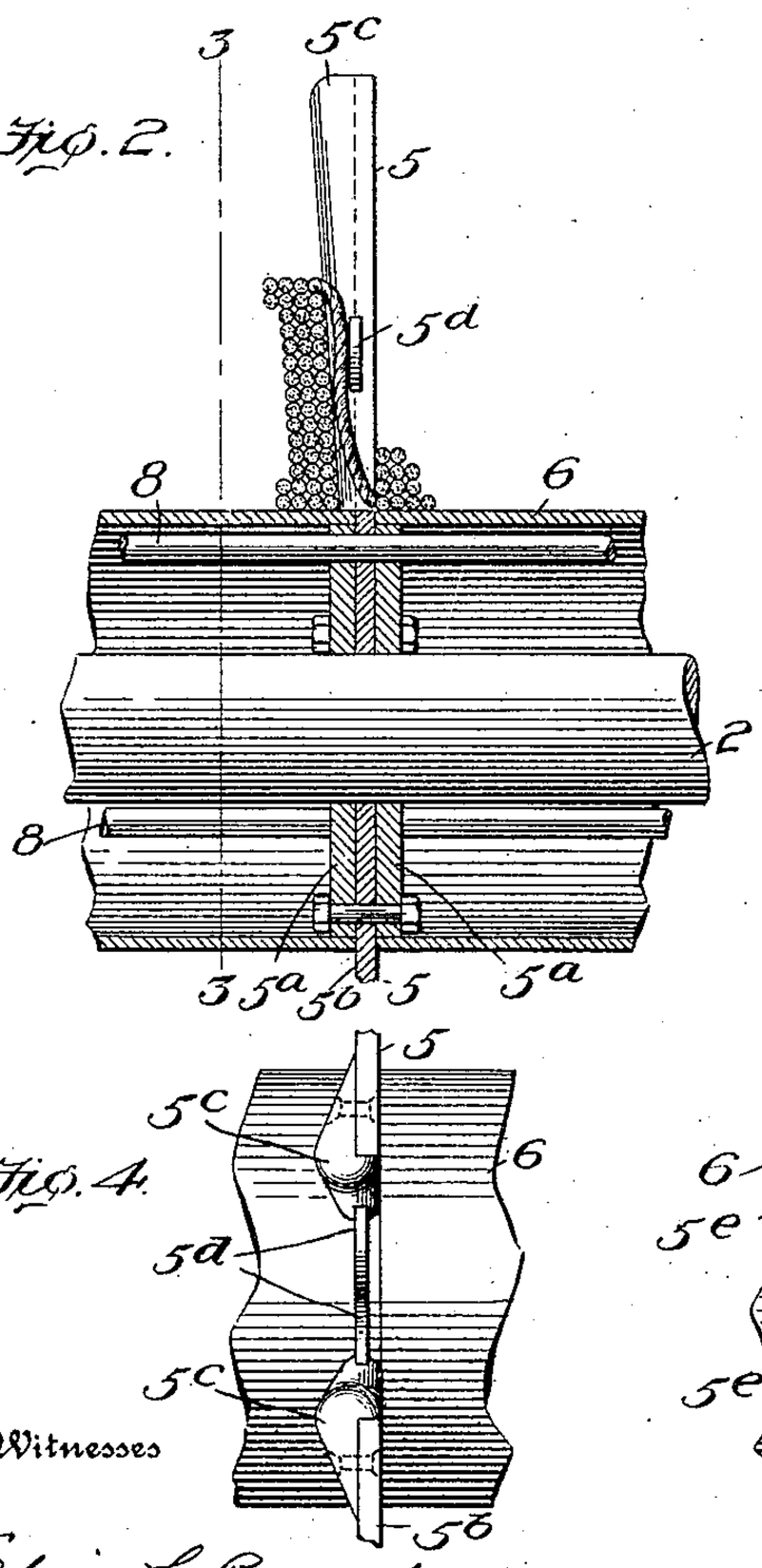


Fig. 4.

Fig. 3.

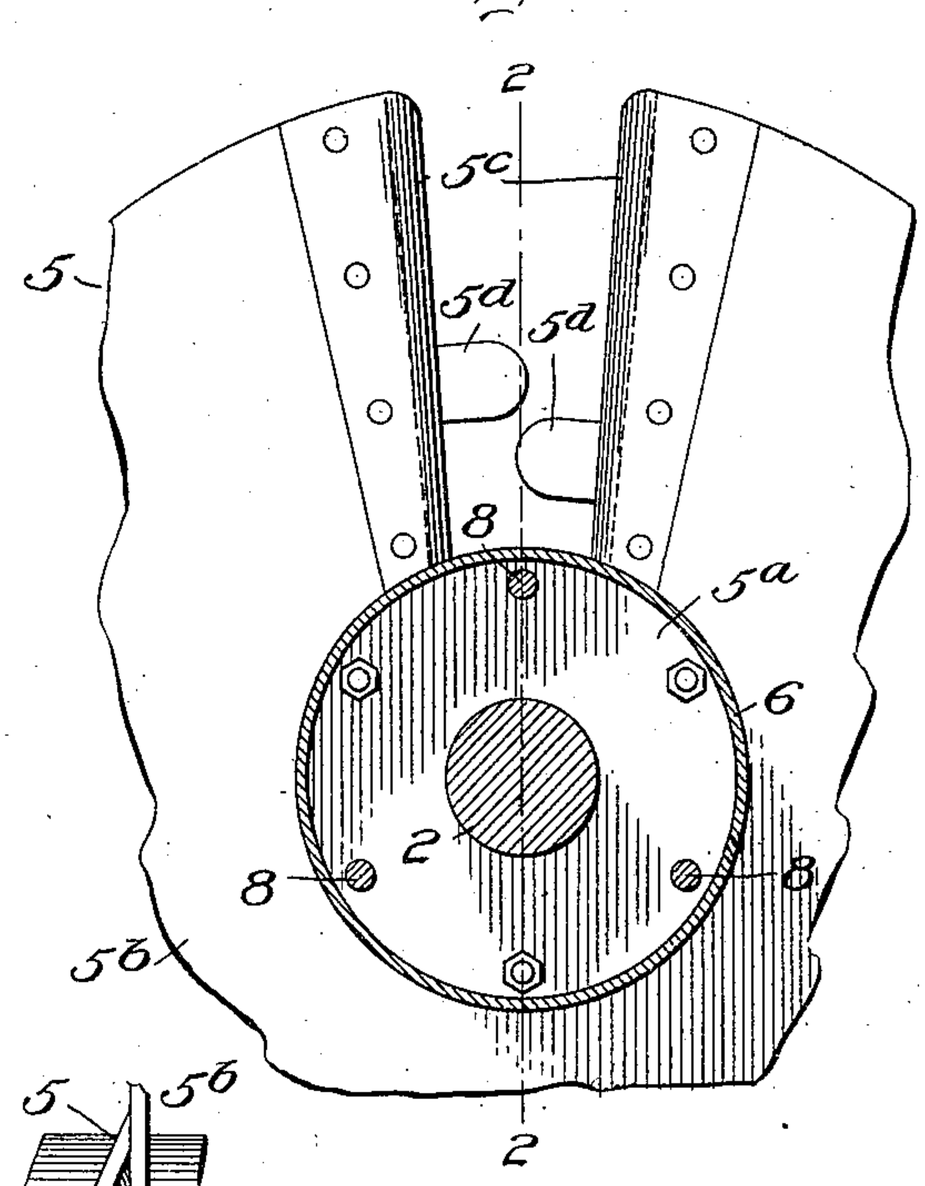
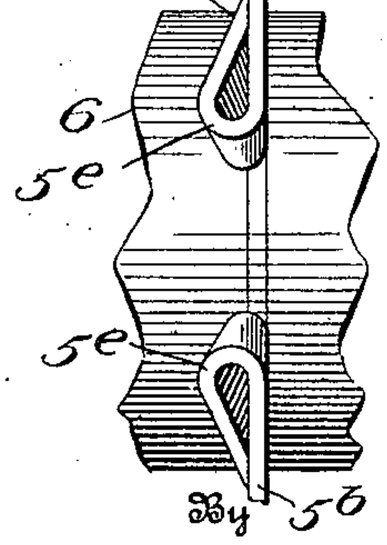


Fig. 5.



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SAND-REEL.

938,609. Specification of Letters Patent. Patented Nov. 2, 1909.

Application filed January 16, 1909. Serial No. 472,648.

To all whom it may concern:

Be it known that I, LOUIS C. SANDS, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Sand-Reels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the construction of sand reels for well drilling apparatus, and has for its object to provide a simple and durable structure which is efficient to prolong the life of the sand line by preventing excessive wear thereof.

In the early stages of drilling operations, it is only necessary to use a small portion of the sand line, but as the drilling progresses and the hole becomes deeper, greater and greater lengths of the line must be wound upon and unwound from the sand reel. When the entire sand line is spooled upon a single compartment reel, the part which is merely stored upon the reel is subjected to a very large amount of wear and damage by abrasion and pressure due to the frequent winding and unwinding of the portion of the line which is actually in use. To obviate this unnecessary wear upon the portion of the sand line which is not in use, a slotted partition may be employed to divide the sand reel into two compartments, one of which serves as a storage reel for a portion of the line until it is needed in the drilling operations, and the other of which serves as a working reel for winding and unwinding the part of the line that is actually being used. As the well increases in depth more and more of the sand line, as may be necessary, is transferred from the storage side to the working side of the reel, so that the wear of the working part of the line upon the part which remains spooled upon the reel is materially reduced. Where the sand line passes through the slot in the partition dividing the sand reel, however, said sand line, by reason of its rigidity as well as on account of the pressure of the coils on the storage side of the reel, projects into the working compartment, with the result that it is subjected to a slicing or abrasive action by the working portion of the sand line as the latter is wound upon and unwound from the working side of the sand reel. This excessive and localized wear upon the sand line it is the special object of this invention to overcome. To accomplish this purpose, I combine with a sand reel having end flanges, an intermediate partition which divides said reel into two compartments, said intermediate partition being slotted radially and being of increased thickness at the margins of said slot; and such a construction embodies one feature of my invention.

A further feature of my invention consists in so forming the thickened margins of the slot in the intermediate partition of the sand reel that the coils of the sand line which are spooled upon the storage side of the reel are deflected away from the working compartment of the reel at and adjacent to said slot.

A further feature of my invention consists in providing the slotted intermediate partition or flange of the sand reel with guides or check members that extend toward each other from opposite edges of the slot.

There are other, minor, features of invention residing in particular combinations and elemental construction, all as will hereinafter more fully appear.

In the drawings chosen for the purpose of illustrating my invention, the scope whereof is pointed out in the claims, Figure 1 is a longitudinal, central section of a sand reel embodying my invention, the pulley and shaft by which the reel is operated being shown in elevation; Fig. 2 is a detail sectional view of certain parts illustrated in Fig. 1, the section being taken in the plane of the line 2—2, Fig. 3; Fig. 3 is a vertical section taken in the plane of the line 3—3, Fig. 2; Fig. 4 is a detail view, looking radially inward, showing the slotted portion of the intermediate flange or partition illustrated in Figs. 1, 2 and 3; and Fig. 5 is a view similar to Fig. 4, but illustrating a modified form of construction.

Like symbols refer to like parts wherever they occur.

I will now proceed to describe my invention more fully so that others skilled in the art to which it appertains may apply the same.

In the drawings, 1 is the sand reel pulley by whiich the sand reel is driven from the

band wheel of the well rig. It is secured to the shaft 2 in any suitable manner, as, for example, by means of a key 3.

The sand reel is comprised of end flanges 4, 4, an intermediate slotted flange or partition 5, and a central drum 6 for receiving the sand line. On account of simplicity of construction and ease of repair, it is preferred to form each end flange 4 as a composite or built-up structure consisting of a shaft-receiving head 4^a, an annular plate 4^b equal in diameter to the internal diameter of the drum 6, and a larger annular plate or disk 4^c which is interposed between the members 4^a and 4^b and is riveted, bolted or otherwise secured to them. The end flanges 4, which may be conveniently secured to the shaft 2 by means of the keys 7, thus supports the central drum 6, as will be readily understood.

The intermediate flange or partition 5 is also preferably a composite structure, consisting of two similar annular plates 5^a, 5^a between and to which the larger, radially slotted disk 5^b is firmly secured. The annular plates 5^a, 5^a also afford a support for the central drum 6, which, it will be noted is in two parts separated from each other by said intermediate flange 5.

When the end flanges 4, intermediate partition 5 and drum sections 6 have been brought into proper relation on the sand reel shaft 2, as illustrated in Fig. 1, the several parts are drawn firmly together by through-bolts 8 which bear upon the outer faces of the shaft receiving heads 4^a located at the opposite ends of the sand reel. By this means the drum sections 6 are secured against rotation with respect to the flanges 4 and 5 without the necessity of extra fastening devices.

The intermediate flange or partition 5 is provided with a slot or opening which permits the sand line to be led from the storage side of the sand reel to the working side thereof, as shown in Fig. 2 of the drawings. This slot preferably extends radially outward from the surface of the central drum 6 to the periphery of the intermediate partition 5, thus enabling the sand line to be easily inserted therein or removed therefrom. Adjacent to the said slot the intermediate partition 5 is increased in thickness, such increase of thickness being preferably accomplished by riveting columns such as 5^c to the center flange 5^b at the radial margins of the sand-line receiving slot therein. The columns 5^c project into the storage compartment of the sand reel, thus deflecting the coils which are spooled upon that side away from the working compartment of the reel. Upon the working side of the intermediate partition 5 the columns 5^c preferably lie in the plane of the annular plate 5^b, the portion of the sand line actually in use being thus permitted to lie closely against the face of the intermediate partition 5 throughout. Upon the storage side of said partition said columns 5^c are extended backwardly from the margins of the slot and are gradually tapered to form a smooth termination on the surface of the plate 5^b. Each of the columns 5^c is preferably formed with a guide member or check member 5^d. These members, which extend toward each other from opposite sides of the sand line receiving slot of the intermediate partition 5, are located at different radial distances from the axis of the sand reel, the arrangement being such that the ready withdrawal of the sand line from the slot is not prevented. The guides 5^d, 5^d may, and preferably do, overlap each other so that either of them may effectively engage the sand line, and they are preferably located so that they stand within the slot between the working face and storage face of the intermediate partition 5. When the sand reel is in use, the short section of sand line which passes through the slot is led from the storage side of the reel, then through the slot and under that one of the guides 5^d which is nearer the outer stored coils, and then spooled upon the working side of the reel.

In the construction shown in Fig. 5 the columns 5^e bordering the radial slot in the member 5 are formed by cutting the annular plate 5^b radially from its periphery to the surface of the drum 6 and also circularly at the circumference of said drum for a short distance on either side of said radial cut, and then rolling or curling the metal of the plate 5^b upon itself to form the said columns 5^e, as will be readily understood.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A reel having end flanges and an intermediate partition, said intermediate partition having an opening therein adapted to permit the passage of a rope and being of increased thickness at the margins of said opening.

2. A reel having end flanges and an intermediate partition, said intermediate partition having a radial slot the marginal walls of which project beyond the face of said partition.

3. A reel having end flanges and an intermediate partition, said intermediate partition having an opening therein adapted to permit the passage of a rope, and a guide member extending into said opening.

4. A reel having end flanges and an intermediate partition, said intermediate partition having a radial slot, and a plurality of guide members carried by said partition and extending into said slot.

5. A reel having end flanges and an intermediate partition, said intermediate partition having a radial slot the radial margins whereof are provided with columns having guide members that extend into said slot, said columns projecting beyond the face of said partition.

In testimony whereof I affix my signature, in presence of two subscribing witnesses.

LOUIS C. SANDS.

Witnesses:
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A. G. HEGGEM.