W. R. EDELEN.

Sand Pump Reel.

No. 236,009. Patented Dec. 28, 1880.

Fig. 1.

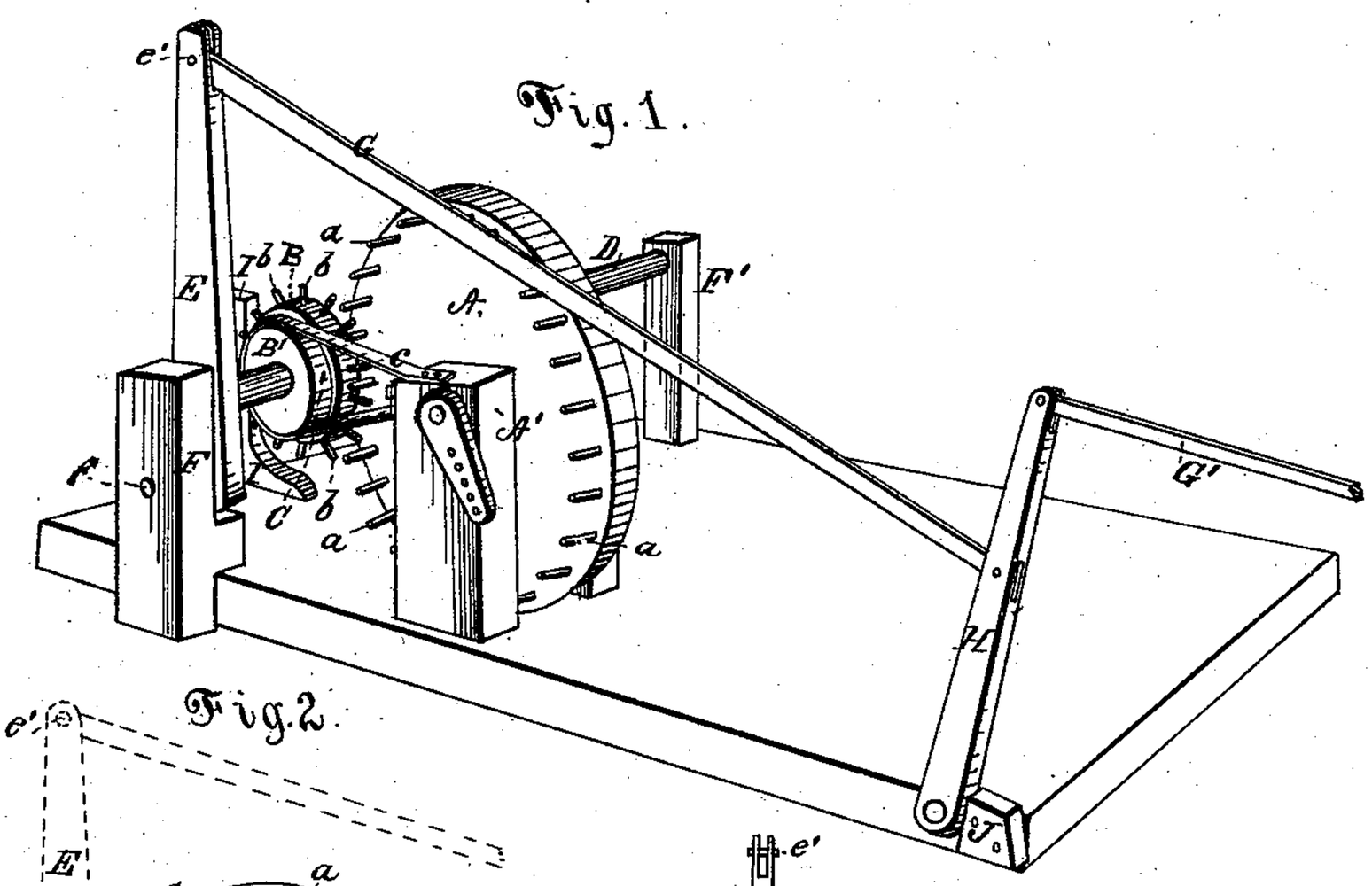

Fig. 2.

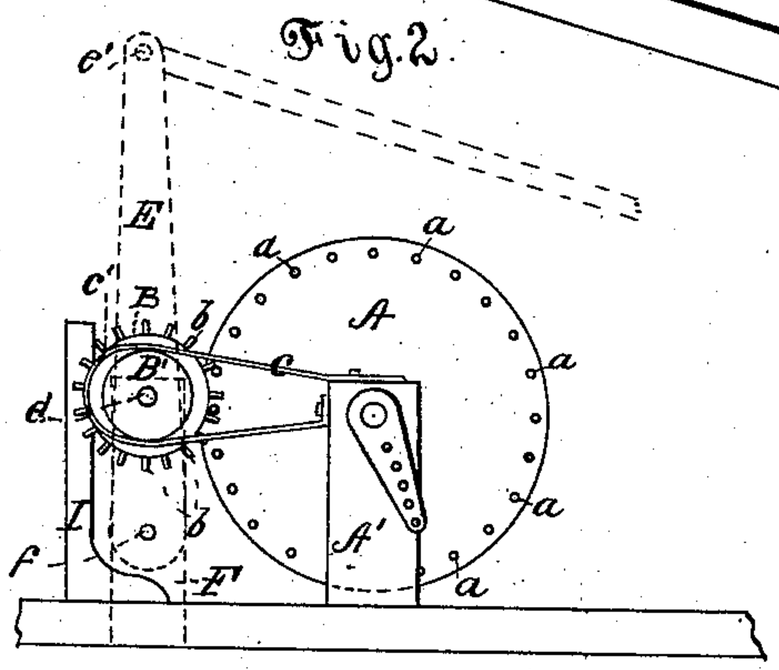

Fig. 3.

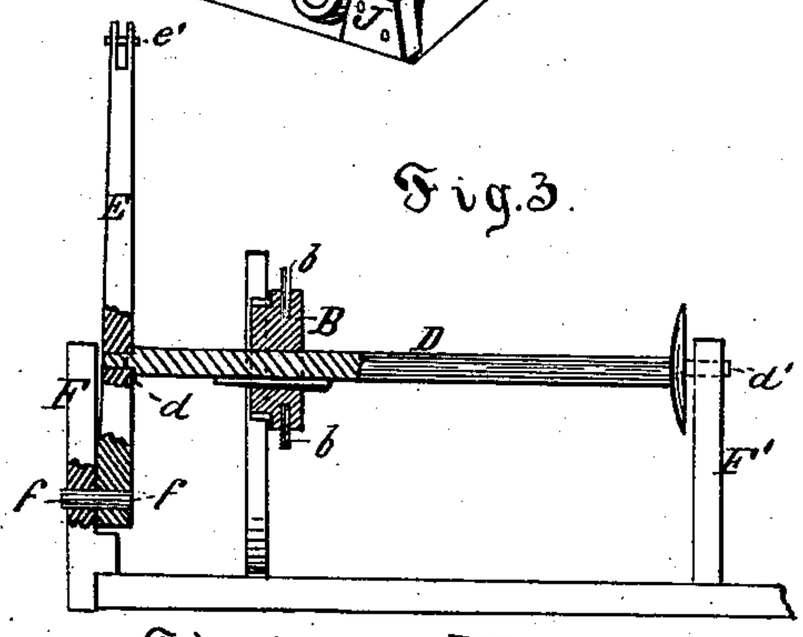

Fig. 4.

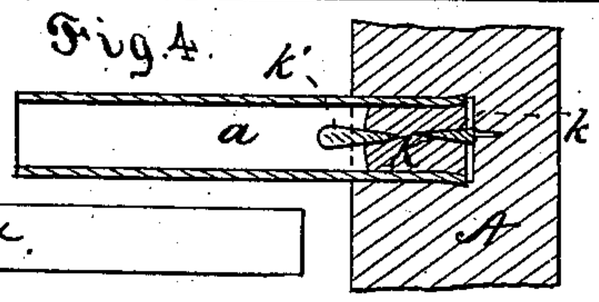

Fig. 5.

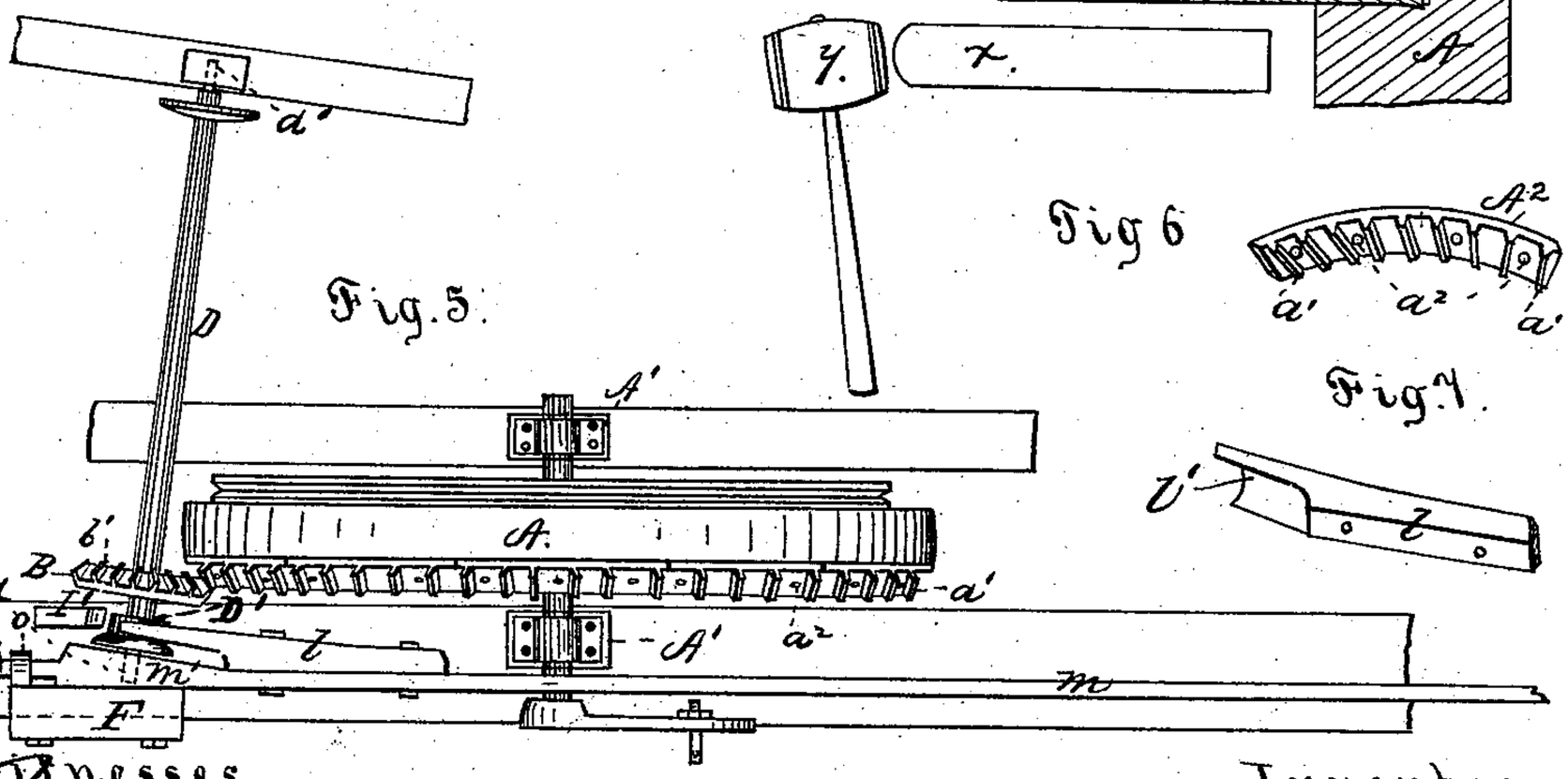

Fig 6

Fig. 7.

Witnesses

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WILLIAM R. EDELEN, OF OIL CITY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO BENJAMIN F. BRUNDRED, OF SAME PLACE.

SAND-PUMP REEL.

SPECIFICATION forming part of Letters Patent No. 236,009, dated December 28, 1880.

Application filed October 13, 1879.

To all whom it may concern:

Be it known that I, WILLIAM R. EDELEN, of Oil City, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Sand-Pump Reels for Oil-Wells; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The invention relates to improvements in sand-reels for oil-wells and other purposes.

Heretofore sand-reels were generally operated by friction, the face of the sand-reel pulley being drawn against the face of the band-wheel; others were operated by means of a sleeve on the band-wheel shaft moved by means of a rack and pinion.

The first devices are objectionable on account of repeated repairs required and danger in operating. In these devices the sand-reel pulley is drawn against the band-wheel by means of a lever connected to a long bar and operated from within the derrick. As the convex surface of the sand-reel pulley and band-wheel is very small at the frictional point, there must be considerable manual force expended in operating this device. In fact, in several instances the band-wheel and its jack-frame have been lifted from their bed. Several cases have occurred where the rig has caught fire from the great friction on the sand-reel pulley and band-wheel, and it is very dangerous near oil-wells. It is further objectionable on account of the sand-reel pulley roughing the surface of the band-wheel and destroying theface of the same, thereby injuring the rubber belting, which has thus to be renewed frequently.

The second device is objectionable on account of the shortness of the drum for winding up the sand-line thereon, as the flanges on the ends of the drum abrade the line, wearing it unsafe in a very short time; and as this necessitates a renewal, it is very expensive, as some of the lines are from sixteen hundred to two thousand feet in length. The drum in this style of reels cannot be lengthened, on account of the length of the band-wheel shaft being necessarily short for the purpose of strength. There are other sand-reels which are also operated with a small drum, but they present the same objection with reference to the wearing of the sand-pump line.

The object of my invention is to produce a sand-reel that will suit the operators as well as the owners of oil-wells, be convenient to operate, and not strain and uselessly wear any of its parts any more than the machinery in common use.

The invention consists in the combination of a band-wheel provided on its sides and near its periphery with pins about parallel with the band-wheel shaft, with a pinion provided with pins upon its periphery, a brake-wheel attached thereto, a brake-band, and mechanism for operating the same, constructed as hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of my improved geared sand-pump reel. Fig. 2 is a side elevation of a portion of the same, and partly shown by dotted lines. Fig. 3 is a view of the sand-reel shaft, its pulley and operating devices partly in section. Fig. 4 is a section of one of the driving-pins, also showing the manner of securing it into the band-wheel. Fig. 5 represents a top view of my improved reel provided with cast teeth meshing with a cast toothed sand-reel pinion and operating-rod. Fig. 6 represents one of the cast-iron toothed segments. Fig. 7 represents, in perspective, part of the shifting and braking device.

The shaft of the band-wheel A is mounted on jack-posts A′, which are secured to sills resting on the ground. The band-wheel is provided with a series of pins, *a*, which may be of solid iron, wood, or composed of pipe or tubing. Said pins engage with pins *b*, driven into the face of the sand-reel wheel B, and drive said reel-wheel to elevate the sand-pump as the line is wound around the sand-reel shaft D. Said reel-shaft is secured loosely into a post, F′, being provided with a gudgeon, *d′*, at one end. The opposite end is secured by a similar gudgeon, *d*, into the lever E. The

lower end of said lever E is fulcrumed by a pin or bolt, *f*, passing through the rigid post F. At the upper end of said lever E is secured, by a pin, *e'*, a connecting-bar, G, which is secured to a lever, H. Connecting with said lever H is a secondary lever, G', which extends inside of the derrick, for the convenience of the operators of the well.

Forming part of the sand-reel wheel is a pulley, B', to receive a brake-band, *c*, which is secured to the jack-post A', or to any other stationary part. There is also a brake-post, I, back of the brake-pulley, to be relied upon in case said brake-band should break, or it can be used in place of said band.

In manufacturing my sand-reels I preferably make the pins (secured into the band-wheel) of tubing, and secure them in the simple and effective manner as shown in Fig. 4. The hollow pin is split lengthwise for a short distance at one end, and a series of holes having been made at equal distances apart into the wheel, short wedges *k* are secured into the bottom of the holes, the hollow pins entered therein, and a wooden plug, K, is driven onto this wedge with a pin, *x*, and maul *y*, which splits the plug and expands or flares out the end of the tubing-pin *a*. A pin, *k'*, can also be placed on top of the plug K, and be driven therein to secure said pin *a* to the wheel.

In the modification shown in Fig. 5 the teeth *a'* are cast with the segments A^2, and secured to the band-wheel by bolts a^2. They operate a pinion-wheel, B, having teeth *b'* cast solid with said wheel. This pinion is capable of a lateral movement for throwing the reel D in and out of gear. This movement is accomplished by means of a bar, *m*, having the journal *n* resting in a staple, *o*, for a guide. The inclines *m'* and *l* form a yoke around the rim or flange of the fixed pulley D', to throw the reel-pinion B in and out of gear. When throwing the reel-pinion out of gear the part *l* around wheel D' serves as a brake, being concave on the under side, as shown at *l'* in Fig. 7; or the post I' can be used as a brake by forcing the wheel D' against it, with the piece *l* attached to the bar *m*, the latter being secured to a lever, H, as in Fig. 1. The lever H is provided with a stop, J, to prevent drawing the face of the reel-wheel against or too close to the band-wheel.

In Fig. 2 the brake-band *c* is shown at *c'* as not in contact with the brake-pulley when said pulley is in gear with the band-wheel; but when the wheel is thrown out of gear the brake-pulley comes in contact with the part *c'* of the brake-band.

When it is desired to lower the sand-pump the operator in the derrick pushes on a lever which moves the bar G', the latter operating the lever H, which drives forward the connecting-bar G, and thus operates the lever E, which carries the end *d* of the sand-reel shaft, and thus forces it either against the brake-band *c* or else against the brake-post I, which prevents the sand-pump from descending too rapidly.

The description holds good in the modification shown in Fig. 5.

As soon as the sand-pump has reached the bottom of the well it is withdrawn by pulling said connecting-bars and levers, which draw the sand-reel pinion B toward the band-wheel, and the teeth or pins *b* engage with the pins *a* on the band-wheel, (which is constantly revolving,) and thus wind the sand-pump line around the reel-shaft D, and elevate the sand-pump, after which the reel is thrown out of gear, and the drilling can be continued until it is necessary to use the sand-pump again.

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

1. The combination of a sand-reel provided with a cast toothed pinion, a band-wheel provided with cast toothed segments secured thereto, a bar, *m*, having grooved arm *l* and journal *n*, with a staple, *o*, secured to the frame of the device, substantially as shown and described.

2. In a sand-reel, the combination, with the body of a band-wheel, of the hollow pins *a*, split at one end, wooden plugs K, and wedge-pins *k*, substantially as shown and described.

3. The combination, with a band-wheel A, having teeth *a a'*, a pinion, B, provided with teeth *b b'*, with a brake-band, C, brake-posts I I', and the devices for throwing the same in and out of gear, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM R. EDELEN.

Witnesses:
B. F. BRUNDRED,
C. D. W. LILLIENDAHL.