

No. 765,969.

PATENTED JULY 26, 1904.

N. K. F. HANSON.
CENTRIFUGAL PUMP.
APPLICATION FILED OCT. 27, 1903.

NO MODEL.

Fig. 1.

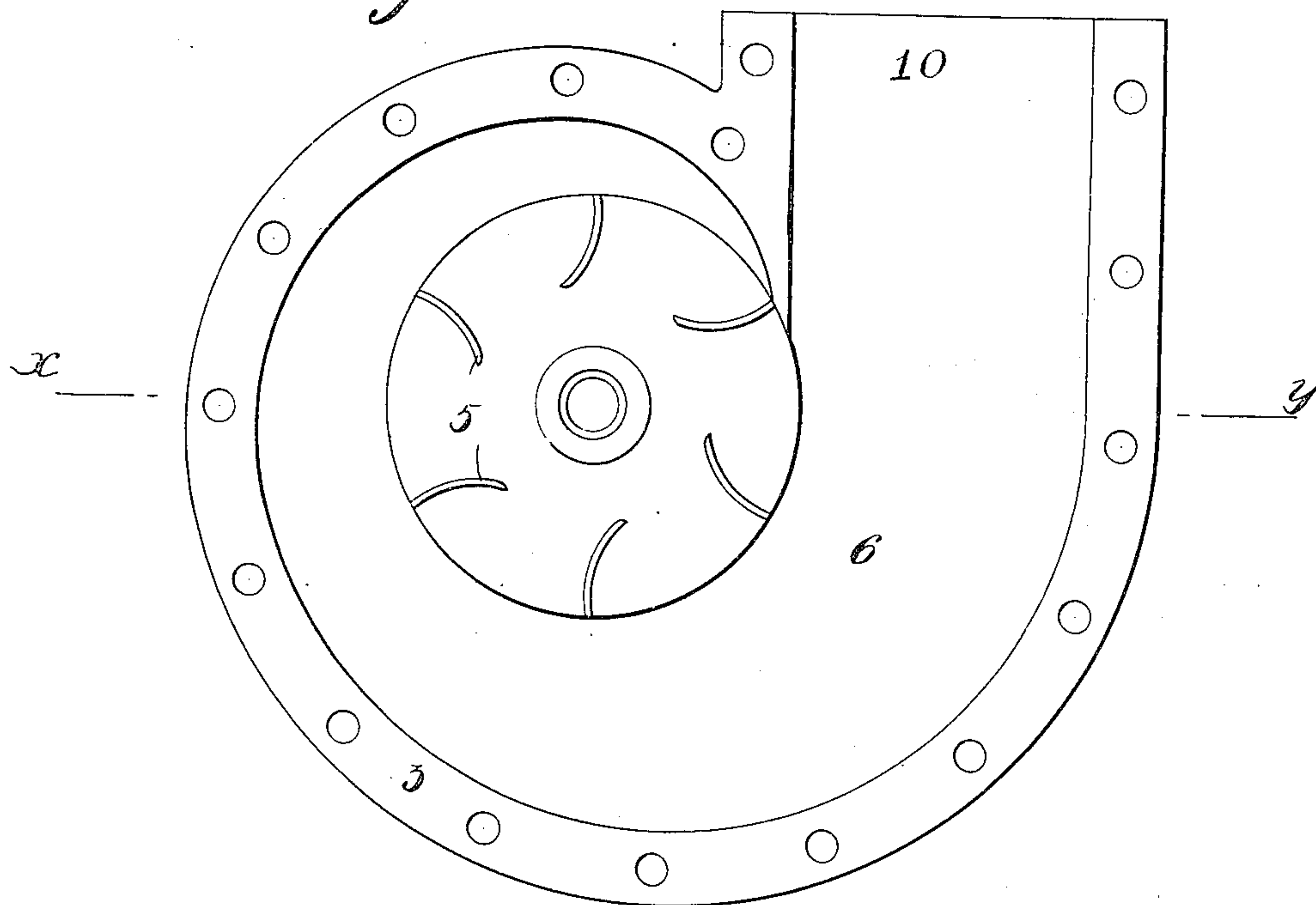


Fig. 2.

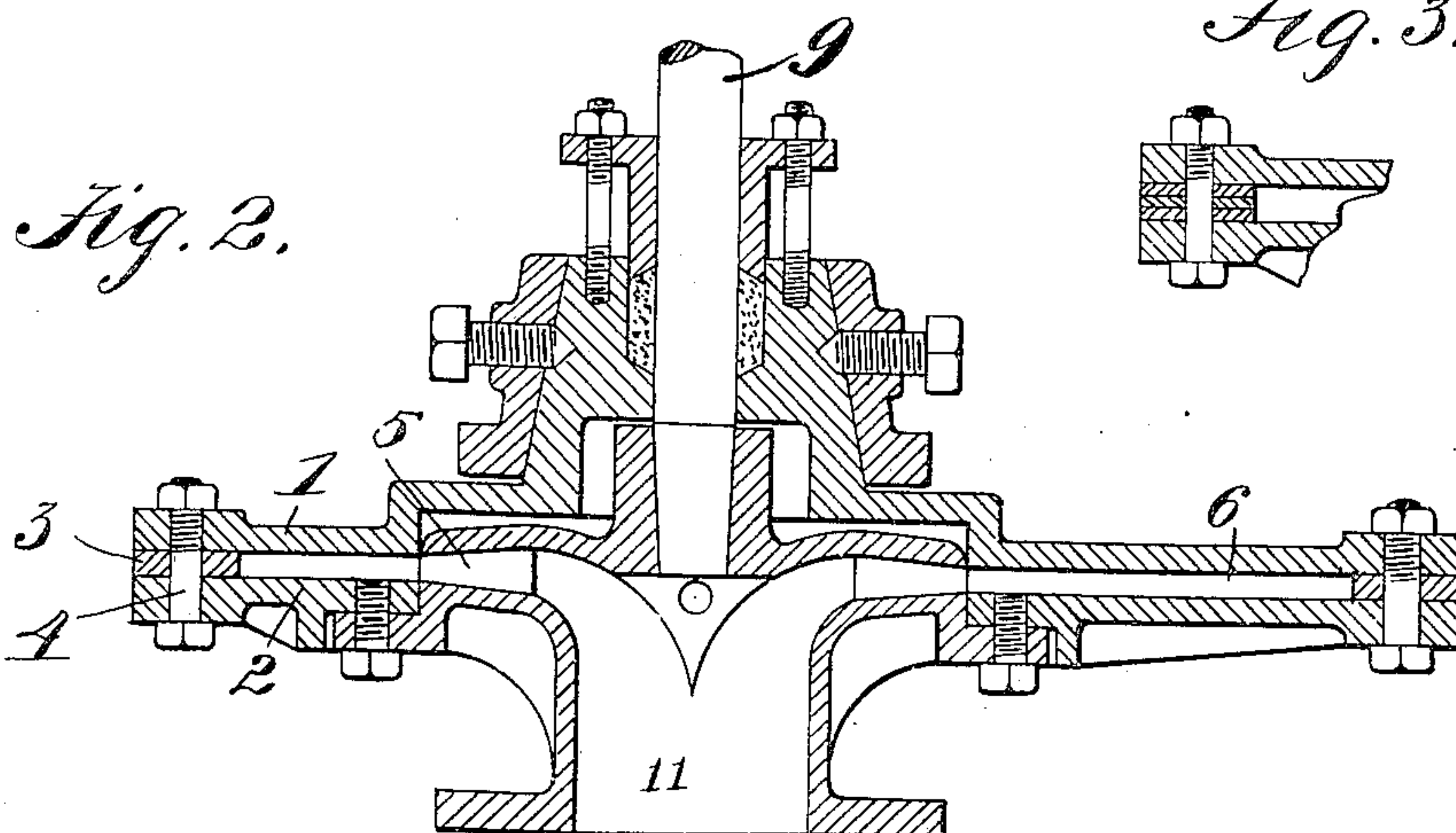
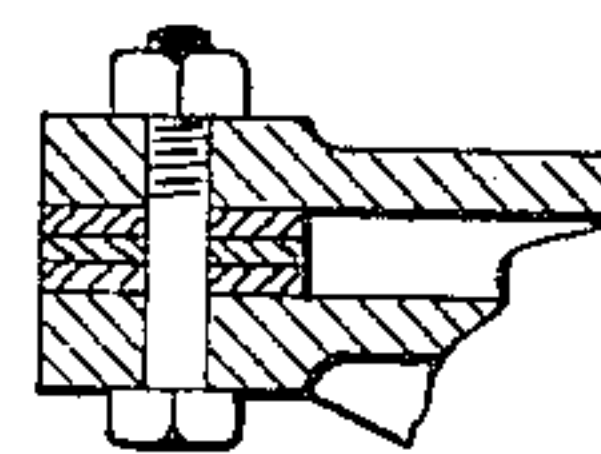


Fig. 3.



WITNESSES

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NILS KNUT FREDRIK HANSON, OF UTANSJÖ, VEDA, SWEDEN.

CENTRIFUGAL PUMP.

SPECIFICATION forming part of Letters Patent No. 765,969, dated July 26, 1904.

Application filed October 27, 1903. Serial No. 178,677. (No model.)

To all whom it may concern:

Be it known that I, NILS KNUT FREDRIK HANSON, a subject of the King of Sweden and Norway, and a resident of Utansjö, Veda, in the Kingdom of Sweden, have invented certain new and useful Improvements in Centrifugal Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

The centrifugal pumps at present in use have the disadvantage that they cannot be regulated after they are fitted up for different quantities of water or head in any other way than by varying the speed, which is most frequently impossible to effect when the motor, transmission-gear, and so on are, as is usual, common to several machines. Besides, if the effect is greatest at a certain speed then it is obviously a disadvantage not to allow the pump to travel at this speed.

This invention therefore relates to an improvement by means of which it is possible to adjust the pump for the head or quantity of water desired by changing certain pump parts. This is accomplished by the outer wall of the water-channel passing round the turbine-wheel or the like being made in the form of a detachable part interposed between the plane sides of the pump-casing, which part can easily be altered in thickness or be changed for a narrower or broader one as and when required. Centrifugal-pump casings with plane insides are in themselves nothing new; but the plane part nearest the turbine-wheel has usually been limited outward by a flange forming a non-detachable outer wall or had such a small extension radially that it could not form a suitable surface for a loose interposed partition to rest against.

Figure 1 in the accompanying drawings presents a side view of the pump with half of the pump-casing removed, and Fig. 2 shows the same in section on the line $x y$ in Fig. 1. Fig. 3 shows a modification.

The pump-casing consists of the two plates 1 2 and the above-mentioned interposed part 3, mounted between them, the whole being held together by bolts or screws 4 or the like. As will be seen, the sides or covers 1 and 2 are plane on the inside from the periphery of the

turbine-wheel 5 and out to the outer edge, and it will further be seen that the said plane part has relatively large dimensions radially. In consequence of this it is possible by mounting a broader or narrower interposed part 3 in a radial direction to vary the depth or breadth of the groove or slot-like water channel or chamber 6, according to the amount of pressure or head. At a greater head a broader interposed part is employed and at a lower head a narrower one. In the drawings is shown an interposed part of small breadth that is with great inner diameter, and it will be seen that the same can be substituted by a part of considerably smaller inner diameter without any detrimental space arising in consequence thereof between the same and the adjacent sides 1 or 2. The channel or chamber or groove 6, which in consequence of the plane sides of the walls 1 2 imparts to the water a flow as free from eddies as possible, thus has in every instance a really exact form, such as is alluded to. Obviously a thicker or thinner interposed part 3 may be substituted, and a suitable turbine-wheel may be mounted on the shaft 9, according to the head or pressure. For a greater head a thinner part is interposed, and for a smaller head or greater volume of water a thicker part is interposed. The interposed part 3 may obviously also consist of several superposed plates, the number of which is increased or diminished, according to the desired dimensions, in the direction of the axis of the channel or chamber 6. Fig. 3 shows a number of such superposed plates. Another advantage connected with the invention described is that the inside surfaces can be so easily turned and polished that the vanes of the turbine-wheel or the like fit well against the same.

The object in varying the size of the inner casing of the pump or of the water channel or chamber is to provide means whereby the pump will be adapted to greater or smaller heads of water, as the greater the head of water the smaller must be the area of transmission for the same quantity of water, as the water for a greater head must have a correspondingly greater speed, and therefore the pump-casing will be smaller for a greater head

than for a smaller one. It will also be seen that the water chamber or channel in which the wheel 5 is placed is of much greater diameter in one direction than in the other, and 5 the outlet 10 thereof is placed at one end of the greater diameter thereof and is formed tangentially thereto, while the inlet from said chamber or channel is formed centrally of the side plate 2, as shown at 11.

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

15 A centrifugal pump, comprising a casing composed of two side plates and an intermediate annular plate, said plates being connected at the perimeters of the side plates so as to form a central water channel or chamber, said channel or chamber being of greater diameter

in one direction than in the other, and a turbine-wheel mounted in said chamber or channel 20 eccentrically thereof, and said chamber or channel being provided with a tangential outlet at one end thereof and with a central inlet formed in one of the side plates thereof, the turbine-wheel being also provided with a shaft 25 which passes through the opposite side plate, and the annular plate being changeable so as to vary the depth of said chamber or channel, substantially as shown and described.

In witness whereof I have hereunto signed 30 my name in the presence of two subscribing witnesses.

NILS KNUT FREDRIK HANSON.

Witnesses:

ATER PETERS,

CHARLES ERICSSON.